SECOND HEARING RECOGNITION OF MUSIC

The design and administration
of a research instrument
which examines one aspect of
music listening.

A thesis
submitted in fulfilment
of the requirements for the Degree
of
Doctor of Philosophy in Music
in the
University of Canterbury

by

Margaret J. Wallace

University of Canterbury

1982

ABSTRACT

Listening is the one universal encounter all people have with music. Today the possibility exists of listening to music by itself, for itself, but this accessibility has not resulted in an increase in listening ability nor a closing of the gap between contemporary composers and listeners; consequently listeners need to be assisted to develop their listening skills. Music educators need to understand both the listening process and the composers' expectations.

This thesis investigates Recognition (an important area of listening) through a research instrument, the Second Hearing Recognition of Music Test (SHRMT). Its four sub-tests together with a Musical Background Questionnaire (MBQ) were administered in Intermediate Schools. Findings from the SHRMT (using a study of the errors) isolated features of the music which pupils recognised more easily, for example the outline and range of notes of a piece. The pupils identified two parts of the listening process with which they had difficulty - Attention and Memory; teachers identify an additional problem area - Attitude. A review of the general research on these topics has implications for music educators. In terms of their performance and home background the more musically experienced pupils achieved better. The boys' comparative lack of music training outside of the school system evidenced the disadvantaging effects of cultural prejudices.

Several New Zealand composers were interviewed to ascertain their ideas on improving listening to contemporary music. The main problems identified by composers were listener attitudes and unfamiliarity with the music and suggestions for improving these were given.

The conclusion relates these three approaches of the Thesis (Testing, Review of Research and Interview) to the topic and shows that they speak with a single voice on the question of promoting adequate strategies for listening to music and especially to contemporary compositions.

ACKNOWLEDGEMENTS

The author wishes to acknowledge with gratitude the assistance of all those people without whose help this thesis would not have been possible.

In particular, to my Supervisor Mr. John Jennings of the Music Department of the University of Canterbury who has been patient and helpful. His readiness to be available for consultation has been appreciated and his attention to detail has contributed much to this study.

To Mr. Brian Keeling my Supervisor of the Education Department of the University of Canterbury who has provided direction in the use of statistics and computer programmes and has provided much appreciated detailed comment on the work.

To the Headmasters, Staff and Pupils of Branston and Kirkwood Intermediate Schools for co-operating in the testing;

To Martin Lamb who played the piano for the Shape, Rhythm and Texture Sub-tests and to the Music Performance Students who played for the Timbre sub-tests;

To the Music Department of the Secondary Division of the Christchurch Teachers' College for the use of their rooms;

To Mr. Michael O'Connor for preparing the tape;

To Miss Beryl Nottingham for being so helpful with the typing;

To Relations and Friends and especially Mr. and Mrs. L. Watson for providing a friendly place to work;

To my Family for accepting this thesis as part of their life and my husband Bill for loving support and assistance.

Some limitations have been placed on this study because of lack of finance which has resulted in limited access to microfilms which could have been of use. Difficulties beyond the author's control prevented the obtaining of one particular microfilm on Short term memory by D. B. Williams from the University of Washington, School of Music 1973.

CONTENTS

LIST OF TABLES

INTRODUCTION

This study arose out of a consideration of the extent to which listeners can hear or should even attempt to hear the formal details of a piece of music.

The author approached this problem initially as a listener, subsequently as a composer and finally as a teacher who was concerned to bridge, as effectively as possible, the gap between contemporary composers and contemporary listeners. However, on reflection it was apparent that the difficulties experienced and the questions raised in listening to contemporary music are the same as those experienced when listening to any type of unfamiliar music. The question of what the listener can actually hear must be examined if the general field of listening is to be explored adequately. However this topic covers such a wide area that only one aspect can be explored in this study, namely the second hearing recognition of music.

In any consideration of the listening process, as well as an examination of the set listening task, there needs to be consideration of the qualities that the listeners bring to the exercise, since background and personal musical involvement make a major contribution to listening performance.

Evaluation of the subject's listening behaviour as revealed in the specified listening exercise, together with a consideration of his or her perception of the mental processes involved will almost certainly shed light on the mental strategies being employed. Insights concerning such strategies can then be incorporated into teaching programmes so that good listening may be practised more efficiently and the goal of heightening aesthetic enjoyment attained.

Throughout music history listeners have experienced difficulties with the latest (or least familiar) music of contemporary composers. It was therefore decided that an examination of the thinking of a selection of New Zealand composers on the relationship between listeners and their compositions would provide insights as to the best approach to adopt when listening to their music and thus enable the listener to arrive more quickly at an encounter with the heart of the music. As well as providing

insights from the point of view of the writer of the music, composers can provide important information about listening, since they constitute one of the most sophisticated groups of listeners within the community.

The insights gained from these three lines of enquiry, the listening task, the listener's background and the composer's thoughts about the listener and his/her music should contribute to a more effective promotion of listening and aesthetic enjoyment.

OUTLINE OF THE STUDY:

PART ONE of this study involves a discussion of the kinds of listening and a listening model is suggested. The current situation regarding listening is described and the unique nature of music listening is explored.

The gap between the contemporary composer and the contemporary listener is then investigated and the analagous nature of listening to any unfamiliar music is noted. Next the research involved in the Second Hearing Recognition of Music test is described. Then follows the research on listeners' background attitudes, mental processing and personal performance. Lastly the thoughts and attitudes of a selection of composers towards listeners are examined. After the relevant background research has been presented the particular questions addressed in this study are set out.

PART TWO of this study concerns the administration of the Second Hearing Recognition of Music Test and the results obtained.

PART THREE consists of the results of the Musical Background Questionnaire and the linking of the results with those of the Second Hearing Recognition Test.

PART FOUR presents the conclusions arising from the tests together with comments from New Zealand Composers and suggests areas that could usefully be researched in order to promote better listening.

PART ONE

LISTENING

KINDS OF LISTENING

Listening is basic to music. Indeed all encounters with music must rest on a foundation of listening. The raw material of music is sound and if music is to be experienced, sound must be heard and interpreted. Almost all people with adequate hearing are involved in listening to music to some degree; indeed, because of the increasing obtrusiveness of music (acoustic pollution some would call it), involvement is almost inescapable. The differences between people lie in the degree of their involvement in listening. Listening to music occurs at different levels and the confusion between these levels is the cause of much of the situation described by E. M. Forster

> "Listening to music is such a muddle that one scarcely knows how to start describing it." [1]

The lowest level of listening involvement occurs with musak with its imposed selection pervading the sound space of offices and shops providing an

> "intolerable infringement of individual freedom and of the right of everyone to silence." [2]

A slightly higher level of involvement is to be found in the listening that occurs when music is played in the background while some other activity is carried out. This has developed with the growth of radio programmes during the second world war and the development of programmes such as "Music while you work" designed especially for factories to boost and sustain the efforts of the civilian labour force.[3] The habit of turning on background music is now firmly entrenched in many home and work situations. At this level it is probable that the music only comes to the foreground when something familiar or unusual or unexpected attracts

---

1 FORSTER, E. M. "Not listening to music." Essays on music - an anthology from the Listener (BBC) Ed. Felix Aprahanian, London, Cassell 1967, page 1.

2 BLAUKOPF, K. New patterns of musical behaviour of the young generation in industrial societies. Ed. Irmgard Bontinck. Communications presented to the International Symposium Vienna 1972, organised by the International Institute for Music, Drama and Theatre (IMDT) in the audio-visual media.

3 PEACOCK, A. and WEIR, R. The composer in the market place, London, Faber-Music 1975.

the attention. This kind of listening has been called "easy listening." The next level is that of listening (or "non-listening" as Reimer and Evans[4], described it) in an undistracted state, which usually occurs when a person is alone, in comfortable surroundings. The music flows over and around the passively contented, day-dreaming listener, or alternatively activates the listener's fantasy world.

The deepest levels of listening require increasing amounts of involvement and ultimately the full use of attention and the mental processing mechanisms.

Murray Schafer points out

> "Listening to music is a deeply personal thing, and with society moving as it is today, towards uniformity and conventionalism it takes a real courage to discover that you are an individual, with an individual mind and individual tastes in art...Listening to music properly, will help to bring out the uniqueness in you." [5]

Another writer, William Thomson also highlights the individuality of listening when he says:

> "our experiences of music are what we make of them, they can be superficial or deep, highly intellectual or supercharged with emotion (or both). There is no shortage to fit any response that we can muster from the idle tapping of a foot to the brainiest analysis. Our problem is not variety; rather it is making the most of what we have at our fingertips, knowing a piece of music is like knowing a person. It is one thing to observe and respond to skin deep qualities. It is quite something else to make contact with the inner life - those deeper traits that make one person (or one composition) unique and prized. We seek this latter kind of knowing." [6]

Listening then, can mean different things for different people and there are many variables that may affect the listening experience. However, it is the function of the music educator to encourage the attainment of the best possible listening and not to settle for less.

---

4 REIMER, B., EVANS, E. G. The experience of music, Englewood Cliffs, New Jersey, Prentice-Hall 1972, 434p.

5 SCHAFER, R. M. The composer in the classroom, Canada, Universal Edition, 1965, p.4.

6 THOMSON, W. Music for listeners, Englewood Cliffs, New Jersey, Prentice-Hall 1978, p xvi-xvii.

Understandably the best listening for any two people will not be the same but there are enough guidelines already suggested in the music literature to help any genuine seeker to progress towards the goal of aesthetic enjoyment and satisfaction. Some people would say that they do not need to know the precise details about the piece to be able to enjoy it, but if they are really wanting to get to know a piece of music (which is like getting to know another person) then there will be a great curiosity about all the details that have contributed to produce the whole and there will be the desire, as Thomson said,

"to make contact with the inner life."

The quality of listening that in this study is considered to be the ultimate goal could be described as that state of complete attention to, and participation in the music which leads to total encounter at the deepest possible level of aesthetic perception and response. As Norman says, when a person is deeply engrossed in a task

> "the rest of the world might as well not exist; we characterize that feeling as that of being in a highly attentive state. It is like a trance. When the state ends, there is a feeling of exhaustion as if a good deal of mental effort has been expended." [7]

It would be foolish to imagine that this ideal listening state occurs with great frequency in any given individual. In fact it is a state which may occur only rarely because of the circumstances under which listening takes place. Frequently we have to accept lower levels of involvement because of inhibiting physical and mental factors. However, it is vitally important constantly to remind ourselves that this state of ideal listening can occur and that we should be actively endeavouring to produce those situations under which it will most readily happen. This is especially true for the school music teacher who should be continually holding before the pupils the goal of ideal listening and seeking to provide conditions conducive to its occurrence.

The physical factors necessary for ideal listening include the bodily comfort of the listener and the presence of an acoustically satisfactory signal from either a recorded or live source.

---

7 NORMAN, D. A. Memory and attention: an introduction to human information processing. 2nd ed. New York, John Wiley and Sons 1976, p.63.

The mental factors may be summed up in this quotation from Roger Sessions

> "What the composer asks, what the music demands, then, is a willing ear; and I think we should assume from the outset that a willing ear means not only an ear that is free of prejudice, but an ear that is attentive, curious and persevering as well." [8]

This open minded and expectant attitude not only enables the listener to obtain maximum aesthetic enjoyment from the music, but in the concert situation will elicit the best performance from the performer. The end result of listening is the development of a person who can participate fully in music from a wide range of styles. A consideration of a wide range of literature about listening has led to the isolating of particular aspects for deeper investigation. The author has collated these to form the listening model detailed below.

A LISTENING MODEL

In considering listening it is useful to look at the sequence of events which occurs in the process so that the difficulties experienced with each aspect may be discussed. The proposed model assumes a receptor of sound (the ear) which is in reasonable working condition. It is not proposed in this study to deal with the problems of inadequate hearing caused by physical defects of the ear. A sound-source of good quality is also assumed in this discussion. Our attention is thus centred on the listener, the mental processes occurring when a sound impinges on the ear and the aesthetic response.

When the sounds from the source reach the ear of the listener there is a wide variety of reactions possible brought about by the dynamic nature of the process. The best possible aesthetic perception and response (the highest end of the sensitivity continuum) is the result of a number of factors, (i) good attitude, (ii) good attention, (iii) open-minded willingness to listen, (iv) listening skills which facilitate the processing of the musical information, (i.e. recognition of specific aspects), and (v) a well stocked memory so that meaningful connections can be made quickly. At the lower levels of reaction, a poor attitude, which indicates unwillingness to listen, or hostility to the selection offered, will result in poor attention being paid, with the consequence that there will be little material available to be processed to provide an aesthetic response. Between these extremes there are many variations.

---

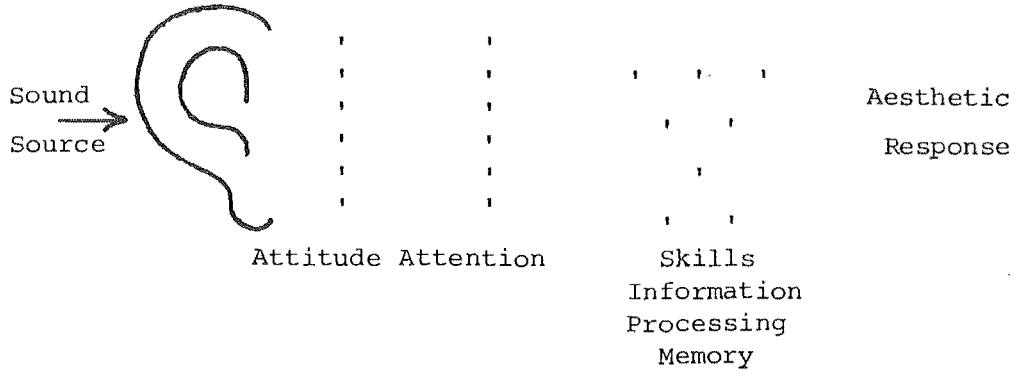
8 SESSIONS, R. H. Questions about music. Cambridge, Massachusetts, Harvard University Press, 1970, p.13

Attitude, Attention and Information Processing may all constitute mental barriers to a satisfactory aesthetic response, and the degree to which these possible mental barriers are operating determines the end result in the listening process.

Negative attitudes, as every music teacher knows, can cause a complete break-down in listening. The information processing and memory aspects depend on previous experience for speed in coding as, for example, in pitch identification, instrument identification and so on. A brain which has had more experience with particular features and in which the retrieval paths are easily found, will be able to process more of the incoming information and thus lead to a fuller experience of the music. More information about a piece will not necessarily produce a greater aesthetic response but may produce a greater alertness in anticipation of such a response.

It is certainly true that those listeners who approach music with an eager and open attitude will obtain the most satisfying response.

MODEL OF THE LISTENING PROCESS



Each of these areas may facilitate or retard the process of listening and the degree to which these possible mental barriers are operating determines the end result of the listening process.

Unless the mental barriers are identified and examined it is not possible to suggest adequate strategies to eliminate or minimise them. This study provides a discussion of these barriers with some suggestions how improvement may be made and how the goal of ideal listening may more nearly be achieved.

The placing of the attitude area first is significant, for if the attitude is poor, little or no attention will be directed to the subject in question, no processing will occur and consequently there will be no aesthetic response. The possession of recognition skills and a good memory will be of no benefit where attitudes are negative. The area of information processing depends to a large extent on the listening skills already acquired, for example the skill of recognising a melodic line which may be smooth and flowing or angular and abrupt, or the skill of recognising particular harmonic patterns. These particular recognition aspects may be called listening skills, and these are acquired through practice and possible training. Once a reasonable vocabulary of listening skills has been built up, the processing of musical information can proceed more quickly and more can be gained from any piece of music.

The significance of memory in music is well illustrated in an analogy suggested by Hoffer[9] in which he says that listening to a piece of music is like viewing a picture through a moving slit. Comprehension of the whole will only be gained if the brain is able to hold together the progressively revealed parts.

The skills which are included in this "information processing and memory" area cover some of the features which are described by Reimer[10] as Aesthetic Perception. Although different names and words may be used to describe these features, the realities described are crucial to any attempt to understand the sequence of events which makes for good listening.

---

9 HOFFER, C. R. The understanding of music. Belmont, California, Wadsworth, 1967, 483p.

10 REIMER, B. A philosophy of music education. Englewood Cliffs, New Jersey, Prentice-Hall, 1970, 173p.

LISTENING - THE CURRENT SITUATION

The current situation regarding listening is paradoxical. On the one hand there is an upsurge of interest in the study of listening as is shown by the number of books written on the subject and the amount of research undertaken, while on the other hand there are technological pressures on the individual which lead to a reduction of his or her ability to listen attentively. The pressures on the individual's ability to listen attentively arise because the technological advances in radio, record and cassette have resulted in music becoming so much a part of the background sound that it has become much more difficult to listen to music *per se*.

These technological advances in music are only one area of change. Until the recent interest in sound pollution, the trend in industry and transport was for the soundscape to be increasingly crowded with noise. The effects of this noise have been two-fold. Firstly the noise pollution may damage the ears and thus reduce the listening potential. Secondly a crowded soundscape requires more effort on the part of the listener to separate out the different strands. Any comparison of the amounts of sound surrounding us would indicate that we are currently being subjected to more and louder sound than in any previous age. Because of this it seems likely that our ability to listen attentively has actually declined.

Schafer suggests that the sounds of tools and technology in primitive cultures accounted for 5% of their sound, in the Renaissance Pre-Industrial cultures 14% but in our time it would represent 68%. Natural sounds for the same groups move from 69% in primitive cultures to 34% in Pre-Industrial cultures and 6% in our present time.[11]

---

11 SCHAFER, M. R. The new soundscape. Universal edition 26905 - BMI Canada Ltd, 1969, p.6.

LISTENING - MUSIC AND VERBAL

To date more work has been undertaken on verbal listening than on music listening. Warren F. Prince sums up the music listening situation

> "Although music listening has been a subject of interest to the musician, music educator and music psychologist almost since human traits began to be studied scientifically early in the twentieth century, studies of listener responses and attitudes have been irregular and unsystematic." [12]

At this point it is relevant to consider whether the findings from the one field of research can be directly applied to the other, or whether listening to music differs in some aspects from verbal listening. Wilson[13] suggests that language and music listening skills are in some ways quite similar. Both depend on sound, and elements of pitch, rhythm and timbre, both depend on the reception of transitory stimuli whose rate and order are arbitrarily set. For both, the attention factor is extremely important and both depend, in part, on the ability to recognise and interpret transitions, phrases and similar constituents of form, and each has a system of written symbols. Memory, discrimination and aesthetic judgements are also commonly associated with both areas. In his study he compared several music and language tests, and concluded that there was a relationship between skill in music listening and language listening. This was probably because of some common factor of a general nature which contributes to skill in both. The correlations between language listening and music listening scores ranged between .31 and .40. However, he did not consider that the measures used, were pure measures of the respective abilities which they purported to test.

Language has been defined as "the whole body of words, and the methods of combining them used by a nation, people or race;" but other meanings include "method of expression, otherwise than by words;" "manner or style of expression;" and "the style of a composition."[14] The first definition cannot be applied to music but the rest can.

---

12 PRINCE, W. F. "A paradigm for research in music listening" Journal of Research in Music Education, vol.20 no.4, winter 1972, p.445.

13 WILSON, W. C. Some inter-relationships of verbal and musical abilities in elementary school children. Unpublished thesis University of California, Berkeley, 1960.

14 ONIONS, C. R. Ed. Shorter Oxford Dictionary London, Oxford University Press, 1950.

There has been debate concerning the precision of meaning of various musical units and whether a particular pattern of notes has a universal meaning. On the one hand Deryke Cooke[15] argues that composers use similar material to express similar meanings or depict similar situations, and on the other, writers such as Hindemith point out that there is no evidence that composers have ever agreed that any group of notes or chords represents a certain meaning, or communicates the same thought. He goes on to say that music is concerned with the communication of musical ideas and it is an unsatisfactory medium for conveying non-musical notions.

> "Music is always an art, but speech is only sometimes so".[16]

Researchers in the field of verbal listening have identified steps in the listening task, which varies as the situation changes, for example listening to an official speech, listening in an informal situation or listening person to person. The techniques identified have been used in programmes to improve listening skills. These writers consider listening to be a neglected skill that can be improved greatly through training and practice.[17]

---

15 COOKE, D. The language of music. London, Oxford University Press, 1959, 289p.

16 HINDEMITH, P. A composer's world. New York, Doubleday & Co. 1961.

17 The following writers are representative of the work in the verbal listening field:

BARBARA, D. A. The art of listening. Springfield, Illinois, 201p.

CLARK, M. C. and MEREDITH, S. G. "Teaching to listen" (Australian Council for Educational Research), Quarterly Review of Australian Education, Dec. 1972, 50p.

DUKER, S. Listening: readings compiled by S. Duker, New York and London, Scarecrow Press 1966, vol.1, 475p., vol.2, 394p.

DUKER, S. Teaching Listening in the elementary school: readings, Meteuchen New Jersey, Scarecrow 1971, 383p.

Much of this material can be adapted to fit the music listening situation, especially where it concerns those areas common to all listening such as attitude, gaining attention and so on. An awareness of the urgency to improve listening skills (especially in the classroom) is apparent in some of this writing. Authors[18] who have provided suggestions for the establishment or improvement of good habits in listening to music have suggested some useful listening progressions based on various formal features of music and on similar classifications. However, these cater more for the older or more self-motivated listener rather than providing suggestions and practical help for the classroom teacher. Some educational texts do include sections on how to encourage better listening. Research such as can be found in unpublished theses may well be an additional source of useful suggestions. One such thesis by M. T. Hagan outlines graded lessons to expand listening skills over a range of aspects such as form and dynamics. Although the official New

---

18 COPLAND, A. What to listen for in music, N.Y., McGraw Hill, 1962. 192p.

DALLIN, L. Listener's guide to music understanding, Iowa, William C. Brown, 1959, 306p.

HOFFER, C. R. The understanding of music, Belmont, California, Wadsworth, 1967, 483p.

RATNER, L. G. The listener's art, N.Y., McGraw Hill, 1966, 306p.

REIMER, B., EVANS, E. G. The experience of music, Englewood Cliffs, N.J., 1972, 434p.

THOMSON, W. Music for listeners, Englewood Cliffs, New Jersey, Prentice-Hall, 1978, 490p.

ULRICH, H. Music: a design for listening, 3rd ed. N.Y., Harcourt Brace and World, 1970, 476p.

Educational Books:

BROCKLEHURST, J. B. Response to music : principles of music education London, Routledge and Kegan Paul 1971, 141p.

BESSOM, M. E., TATARUNUS, A. M., FORCUCCI, S. L. Teaching music in today's secondary schools: A creative approach to comtemporary music education, N.Y., Holt, Rinehart and Winston, 1974, 354p.

Unpublished Theses:

HAGAN, M. T. The structural method of teaching music listening, grades kindergarten through to nine, Ph.D. thesis, Washington, 1971.

RASMUSSEN, W. I. Listening skills through programmed instruction Ph.D. thesis, University Southern California, 1966.

SHRAMM, C. S. An analysis of the listening experience, Ph.D. thesis Illinois, 1971.

Zealand syllabuses suggest a well balanced and rounded approach to classroom music, the implementation in the school is left to teachers who despite having studied material on the particular music topics may be unhappy with those topics or else lack confidence in their own presentation. In New Zealand schools it is possible for children to escape any serious musical encounters and the enrichment which they are capable of bringing.

While it can be seen that some of the elements of music and verbal listening are the same, a review of relevant literature indicates that there are also significant differences.

The nature of communication is different for music and words. As far as words are concerned many forms of verbal communication involve a feed-back situation with the exchange of ideas. In music this kind of situation is only found in improvisation for example in jazz. The variable nature of both verbal and musical language means that precise communication is seldom possible. Even with dictionaries and generally accepted word meanings verbal communications may be misinterpreted by the listener. The communication through music is at a different level with no agreed definitions of the meanings of particular sounds, indeed it is no more possible to translate music into language than to translate a picture into words.

Another area in which there may be difference, is the amount of the brain's input channels used by the respective activities. While the normal speech rate is about 125 words a minute we are capable of thinking at a rate of over 400 words a minute.[19] As yet there does not appear to be any research into what percentage of the brain's input channels are taken up in listening to music. Complex music could well involve the use of more channel resources than simpler music.

Another area of difference is in the cerebral processing of verbal and musical stimuli. For some time it has been generally accepted that the left hemisphere of the brain is concerned with linguistic stimuli while the right hemisphere is concerned with processing non-linguistic stimuli. It appears, however, that listening to music involves both hemispheres. Howard Gardner writes that:

---

19 BARKER, L. L. Listening behaviour, Englewood Cliffs, N.Y., Prentice-Hall, 1971.

> "While a relatively clear division can be made between the capacities crucial in the visual arts and those which figure in the verbal arts, the skills involved in music remain most puzzling. Perhaps this is, in part, because of the varying biological significance of these respective realms: while the survival value or adaptiveness of language and of visual-spatial abilities are evident, with some minimum facility in each characterizing any normal individual, the function of music within the species remains unclear. Whereas the more pronounced uniformity and specialization in the brain for language and for visual constructive processes over the millennia, may well be due precisely to the critical importance of these activities for survival, the far less essential character of music allows for a near-stupefying variation among individuals."[20]

Gardner goes on to point out some of this variety of ability with which teachers especially in core music classes are familiar. (One of the great difficulties in such classes is that the range of ability is so wide and consequently the activities suitable for such a group should be either of a quite general nature or else highly structured so that each person deals with a topic at the appropriate level. The latter requires detailed planning which is time intensive).

> "Some persons exhibit superior gifts from almost the first months of life, often being able to sing before they can talk, to identify and produce pitches perfectly, to achieve virtuoso skills while still in early childhood. Others, often of equal or even superior general intelligence, never display the slightest musical accomplishment, this latter group including many individuals who have received competent formal instruction for years. It is, then, unrealistic to expect a simple pattern of musical organization in the brain, or a compact set of skills which can be compared across individuals; this is especially so, given the presumptive implication in musical capacities not only of the cortex - and both hemispheres at that - but also of the subcortical structures important in rhythmic perception and emotional arousal. Along with each person's unique genetic endowment, background in the field, and customary manner of employing his skills may well come a different neurological pattern, and hence a different configuration of breakdown in the event of brain damage.

---

20 GARDNER, H. The shattered mind - the person after brain damage, London, Routledge and Kegan Paul, 1974, p.348.

> "When to these factors is added the incredible assortment of instruments, forms of music, and musical roles - singer, dancer, drummer, pianist, composer, improviser, conductor, and assorted combinations of these - it is hardly surprising that generalizations so handily elude us in this area, that all attempts to find delimited areas involved in all musical competence seemed doomed to fail. And yet, the new avenues of research we have described - tests which pit the hemispheres against one another, tests which contrast ordinary individuals and individuals with an extensive musical background and skills, studies of musical thinking in normal adults and in developing children, investigations of therapeutic uses - offer at least some hope that, eventually, sense can be made of music's fascinating status in the mind." [21]

Another point that emerges concerning cerebral processing is that there is a difference apparent between the processing by sophisticated subjects and by those with less experience.

Antonio R. Damasio and Hanna Damasio[22] suggest that while it is justifiable to assume that dominance for a general musical faculty tends to develop in the right hemisphere first, a gradient theory would explain how, as training progresses, dominance would be gradually transferred to the opposite hemisphere for perceptual processing. Bever and Chiarello[23] observed that the relative superiority of the right ear for choirboys of the same age, increased progressively with experience in the choir. In the authors' own words there is a possibility that musical sophistication

> "has real neurological concomitants permitting the utilisation of a different strategy of musical apprehension that calls on left hemisphere functions."

Gardner reports that

> "workers at Columbia University have shown that the strong right-hemisphere effects in musical perception are replaced by left-hemisphere effects when subjects with considerable musical accomplishment are examined." [24]

---

21 ibid. p.349.

22 DAMASIO, A. R. and DAMASIO, H. "Musical faculty and cerebral dominance", Music and the brain, Ed. Critchley and Henson, London, Heinemann, 1977.

23 BEVER, T. G. and CHIARELLO, R. J. "Cerebral dominance in musicians and nonmusicians", Science 185, p.537.

24 GARDNER, H. 1974, op cit, p.381-2.

The musical sophistication of any person then, may mean that the stimuli are processed in different areas and judgements as to the place of processing will need to be stated as being for naive or sophisticated subjects.

A study of the areas of cerebral processing for particular aspects of music might well assist in determining sequences of activities. More detailed observations of the shift in processing as seen between sophisticated and non-sophisticated listeners could also suggest more efficient sequences in learning. The evidence[25] suggesting a shift in processing from one hemisphere to another for phrases over a certain number of notes could well be an area for useful investigation.

The complexity of music and its independence from verbal listening can thus be seen. From the results of the research outlined it is apparent that some of the approaches which theorists of verbal listening suggest as aids to listening will be appropriate but are not adequate to promote the total development of music listening skills.

It is thus apparent that listening to music must be considered to be a particular area within the general field of listening.

---

25 DEUTSCH, D. and ROLL, P. L. "Mechanisms in processing tonal sequences", Journal of Experimental Psychology, vol.2, 1976, p.23-29.

THE GAP BETWEEN THE CONTEMPORARY COMPOSER AND THE CONTEMPORARY LISTENER OR THE PROBLEM OF LISTENING TO UNFAMILIAR MUSIC

THE PROBLEM DEFINED

One of the concerns which prompted this study was the gap between contemporary composers and contemporary listeners, a gap that is shown by the reluctance of audiences to welcome contemporary pieces to their concert repertoire. Predictably this unwillingness to experience contemporary art music is also found amongst pupils. Composers are well aware of this gap as the following comments indicate. Gerhard states that it is obvious that there is a gap between a composer and his audience and that this gap has varied in width. He goes on,

> "But I think it is true to say that, on the whole, the gap is pretty wide today, wider perhaps than at most comparable periods in the past, and that it shows no sign of narrowing down." [1]

This point of view was confirmed by Lennox Berkeley in his response to a question by Schafer.

> "It is of course, difficult to affirm the exact relationship during the various past epochs when this gap was most strongly felt; but when one thinks of the most advanced kinds of music that are being written, it does seem that today there is a very wide gulf between the music and the musical public. I think there is fault on both sides." [2]

William Walton reflecting on the present avant-garde composer highlighted some of the current problems when he said

> "It seems to me that it is harder to be a composer today, in the sense that one can only rely on a small audience of trained musicians to appreciate what one is doing. I feel that a lot of composers today are schizophrenic. They write diatonic music for films and ultra-modern music for themselves; one kind for the élite and one kind for the mob." [3]

---

1 GERHARD, R. "The composer and his audience", Twentieth century music Ed. R. H. Myers, London, Calder and Boyars, 1960, p.75.

2 SCHAFER, M. British composers in interview, London, Faber and Faber, 1963, p.84.

3 ibid, p.80.

Alexander Goehr recalls that in the early nineteenth century Bach was not known by the musical public but was appreciated by only a few artists such as Beethoven and Mozart.

> "Popularity can only help the composer while he is alive, and in the material sense. Haydn and Beethoven were only popular in their own day with a few people. In a sense this was better because one could rely on a certain kind of sophisticated audience. It is harder for us because, for the first time we are faced with mass-media of communication. To cope with this large audience is a most difficult problem. You can succomb to it by writing workers' cantatas or popular songs - though the largest audience will prefer the latter - or you can deny the existence of this audience and claim that art is a private affair in some way remote and above the masses." [4]

Burney's 1789 Essay on musical criticism confirms that this is a continuing problem as

> "There have been many treatises published on the art of musical composition and performance, but none to instruct ignorant lovers of music how to listen, or to judge for themselves. So various are musical styles, that it requires not only extensive knowledge, and long experience, but a liberal, enlarged and candid mind, to discriminate and allow each its due praise." [5]

It would seem that keeping up with the creative artists of the day is a continuing human problem. Any positive reaction to a piece by an audience is good but a negative reaction is to be preferred to indifference as Goehr points out,

> "The historic riots at the first performances of many modern masterpieces were a healthy thing. But today audiences expect little and understand less when they hear new works." [6]

Theodor Adorno adds another dimension to the discussion - the type of performance that a new piece is afforded.

---

4 ibid. p.165.

5 BURNEY, C. A general history of music from the earliest ages to the present period, 1789, vol.2, N.Y., Dover Publications 1957, p.7-8.

6 SCHAFER, M. British composers in interview, London, Faber and Faber, 1963, p.165-6.

> "No one who hears a lot of new music, and particularly works which he knows intimately, will deny, for all his sympathy with the performer who ventures into this uncomfortable and unrewarding field, that very many performances are incomprehensible; not only to the layman, who expects nothing different and indeed almost wants it that way, but even to the listener who is familiar with what is offered and identifies himself with it. Indeed, it often sounds as the indignant philistine imagines it - chaotic, ugly and meaningless." [7]

These less adequate presentations of new music can only work against a satisfactory relationship being established by the listener. Some contemporary composers find it difficult to obtain opportunities to present their work because of performance difficulties and also because the composer is often alienated from the rest of society which, while it may allow the composer more freedom, never-the-less often leads to a lack of security of patronage.

J. H. Meuller points out that the music Beethoven and Mozart wrote was often integrated immediately into programmes and they were expected to keep on producing new music. There were no "avant-garde" in Beethoven's time. The gap between composer and consumer is thus greater now.[8]

Milton Babbitt writing in a collection of essays considers that the gap between composer and the listener is not only inevitable but can be considered to be potentially advantageous to the composer.

> "The unprecedented divergence between contemporary serious music and its listeners, on the one hand, and traditional music and its following, on the other, is not accidental and - most probably - not transitory. Rather, it is a result of a half century of revolution whose nature and consequences can be compared only with, and in many respects are closely analogous to, those of the mid-nineteenth century revolution in theoretical physics. The immediate and profound effect has been the necessity for the informed musician to re-examine and probe the very foundations of his art. He has been obliged to recognize the possibility, and actuality, of alternatives to what were once regarded as musical absolutes. He lives no longer in a unitary musical universe of 'common practice', but in a variety of universes of diverse practice." [9]

---

7 ADORNO, T. W. "New music and the public: some problems of interpretation", Twentieth century music, Ed. Rollo H. Myers, London, Calder and Boyars, 1960, p.53.

8 MEULLER, J. H. "The aesthetic gap between consumer and composer", Journal of Research in Music Education, vol.15, 1967, p.151-158.

9 BABBITT, M. "Who cares if you listen", Contemporary musicians on contemporary music, Eds. Elliott, S., Schwartz and Barney Childs, New York, Chicago, San Francisco, Holt, Rinehart and Winston, 1967, p.244.

Having established the existence of a gap between contemporary composers and contemporary listeners we must now examine its causes and effects.

One of the important contributing factors is that, at the present time, the music scene resembles the branches of a large tree with the small peripheral branches representing the tremendous diversity of style found in any survey of contemporary music. The relationships between contemporary music and that of its predecessor the Romantic period can usually be traced after close analysis but the auditory link may be much harder to find, especially when listening opportunities are limited. The apparent unrelatedness of many of the compositions to each other and to earlier music makes it harder to accept them easily as credible examples of music. Limited opportunities for listening also hinder the development of an expanded music vocabulary. Salzman writing about the revolution in music points out that as things are now, anything is possible in music; any sound that exists can be recorded and thus is potentially raw material for composition.[10]

Helm writing for the International Music Council said

> "The point has been reached at which 'advanced' composers are writing for a very small public indeed - a tiny fraction of the 'serious music' public, which in turn represents only a very small part of the population as a whole. We are faced, in short, with an unprecedented public indifference - or downright antipathy - towards that music which is alleged to be the music of our age, embodying the spirit of our age." [11]

Helm goes on to point out that the nature of the "new music" is such that the ordinary concert-goer has no relationship to it. The music is like a foreign language which cannot be understood. The reasons for this lack of understanding are various.

---

10 SALZMAN, E. "The revolution in music" in Twentieth-century views of music, Ed. W. Hays, New York, Charles Scribners and Sons, 1972, p.453-470.

11 HELM, E. G. Composer, performer, public: a study in communication Florence, Leo S. Olschki, 1970, p.16.

> "Some writers have suggested that modern composers are at fault for writing the kind of music they do: 'ivory tower' music, or 'decadent' music, or 'mathematical' music or 'dehumanized' music or what you will. Others lay the blame on the 'stupid public.' Still others, less partial and generally unconvincing, attribute the present crisis to rapidly changing sociological factors and structures." [12]

The result of all this is that the contemporary listener is faced with a bewildering array of compositions by composers who are doing anything and everything. A recent feature of much contemporary music is the use of electronic sounds. It had been thought earlier that the possibilities with electronic sound would be limitless but this is not so

> "for it is apparent that the human ear is not always capable of perceiving the complications which the human brain can devise." [13]

It has been suggested that the internalisation of the western music scale occurs early in life and constitutes one of the most durable families of perceptual motor schema that have been observed in physhology.[14] If this training in tonal patterns is so basic, then the continuous line of increasing sound frequency will not be heard without practice and persistence in all the fine detail that theoretically is possible. A western listener will almost inevitably experience great difficulties listening to music which uses frequency changes smaller than or between the familiar tones and semitones. Babbitt acknowledges that with the tonal vocabulary being used in the "new music" heavier demands are made on "the training of the listener's perceptual capacities." The "new music" like all communication "presupposes a suitably equipped receptor." At present he considers that the situation in which the lay listener is bored and puzzled is to be expected. He asks

---

12 ibid. p.18

13 ibid. p.52

14 DOWLING, W. J. "Scale and contour: two components of a theory of memory for melodies", Psychological Review, vol.85, no.4, 1978, p.341.

> "Why refuse to recognise the possibility that contemporary music has reached a stage long since attained by other forms of activity? The time has passed when the normally well-educated man without special preparation could understand the most advanced work in, for example, mathematics, philosophy, and physics. Advanced music, to the extent that it reflects the knowledge and originality of the informed composer, scarcely can be expected to appear more intelligible than these arts and sciences to the person whose musical education has been even less extensive than his background in other fields." [15]

While no comparisons are available of the amount of musical composition per capita in different ages, the point has been made that contemporary composers do not need to possess the techniques and disciplines of composition that were considered essential in earlier times. The "almost anything is possible in terms of sound" movement has meant that almost anyone can become a composer after a few easy lessons. This easy entry to composing has brought an understandable reaction from "serious" composers as is illustrated by this extract.

> "If composition is to be regarded as a profession, then professional training and skill *must* be prerequisites for its practice - just as in law, medicine, chemistry, engineering, or astronautics. The present situation, in which there are no holds barred and anybody can do anything, deprives the composer of an essential element - namely a frame of reference within which he can create. A frame of reference is not equivalent to a set of rules; rules have been deduced *post facto* from practice in all events. A frame of reference implies certain attitudes and limitations that are accepted unconsciously by the creative artist as the intellectual, stylistic and aesthetic 'room' in which he moves - and which he expands, consciously, according to his temperament and inclinations. A frame of reference implies the existence of order and logic - two characteristics of any communication which is to be intelligible to the perceptor (here: listener). The happening and the non-composition are by nature opposed to order and logic. Undoubtedly the irrational is a major factor of life. Irrationality in art, however, is effective only when it stands in contrast to the rational. When everything is irrational, the concept loses its meaning." [16]

---

15 BABBITT, M. 1967, op cit, p.245-247.

16 HELM, E. B., 1970, op cit, p.62

Babbitt's solution to the problem of the gap is

> "I dare suggest that the composer would do himself and his music an immediate and eventual service by total, resolute, and voluntary withdrawal from this public world to one of private performance and electronic media, with its very real possibility of complete elimination of the public and social aspects of musical composition. By so doing the separation between the domains would be defined beyond any possibility of confusion of categories, and the composer would be free to pursue a private life of professional achievement, as opposed to a public life of unprofessional compromise and exhibitionism." [17]

This extreme solution is not seen by all composers to be the answer (quite apart from its obvious financial consequences).

Thus the music currently presented to listeners poses many difficulties, for not only are there many different styles (the twigs in the tree analogy) but the sounds used in many cases are unfamiliar. These sounds are at times arranged in patterns which are unfamiliar to listeners with only a western tonal background. Another question that is sometimes raised by the listener concerns the integrity or otherwise of the composer. Are some of the apparently "weird" compositions taking the listener seriously? Any music that uses unfamiliar sounds or uses sounds in unfamiliar patterns may create difficulties for listeners.

The presentation of contemporary pieces in concerts also poses problems. Performers have obligations to the composer and also to the audience and at times these obligations may conflict to some degree. Performers trained in Classical and Romantic music do not necessarily have some of the techniques and idioms required. Consequently unless there is plenty of rehearsal time contemporary pieces may not receive the best possible presentation and so may appear to the listener to be more incomprehensible than they really are.

---

17 BABBITT, M. 1967, op cit, p.249.

Adorno says

> "Performing musicians, and above all conductors, have constantly to solve a dual problem; they have to master the apparatus which translates the score into sound, and to reveal the musical sense, the coherence of what is happening. . . A piece of music does not make more or less sense according to the manner of the performance; it is a question of basic quality; unless the meaning is realised completely and every detail is related to this meaning and shaped by it, then in critical instances all will be lost. . . Complex modern compositions require an intense concentration in order to imagine the right solution, let alone to hear it realised in sound." [18]

Adorno is critical of the lack of time allowed for rehearsal.

> "Pieces which even today could scarcely be played decently in much fewer than twenty rehearsals are hustled through in two or three. Anyone who lacks authority generally has to accommodate himself to financial demands; social progress, which has turned executive musicians into protected trade-union members whose every minute costs money, acts as a brake on artistic progress by making it impossible to rehearse adequately, as this means being very generous with time. . . The consequences of all this can scarcely be exaggerated; musical performances, which should bridge in a fruitful manner the tension between the public and a musical work, instead of this deepen the gulf between the two." [19]

An orchestral player reflecting on contemporary composers after thirty years playing experience said

> "It's a bit like drinking new wine, isn't it? If a thing has just been written, nobody's ready for it, the orchestra doesn't know it, it hasn't had time to sink into anybody's subconscious and sometimes you go back to the work 20 years later and think, 'That's got something, you know?' and this is nobody's fault, it happens to every composer. Of course these days we're expected to do all sorts of peculiar things when we play modern works. This is something that I will never in my playing days get used to, and probably never do very well, but it is going to be the thing and they are very interesting." [20]

---

18 ADORNO, T. W., 1960, op cit, p.64.

19 ibid, p.70.

20 SICELEY, M. Concord of sweet sounds - The New Zealand Symphony Orchestra at 30, edited by Keith Hambleton, published by concert department, Broadcasting Corporation of New Zealand, 1977, p.23.

To summarize, the performers or interpreters have a very important place in the presentation of contemporary music.

THE EFFECT OF RECORDING, RADIO AND TELEVISION

Another important factor in the development of the gap between composers and listeners has been the appearance of the record industry with its mechanization and the development of radio and television. This has meant that people have had a profusion of music to listen to and that consequently music listening has been made too accessible with a counter productive effect as far as many listeners are concerned. In pre-technological ages music could only be heard from a live source and this greatly limited the music that could be experienced. In addition the music that was heard was largely the music of the listener's own time as there was no opportunity to hear music from earlier times except perhaps within the church. Today, contemporary composers are not only competing with other contemporary composers for listeners but also with the composers of the five or six previous centuries.

Stravinsky commenting on the mechanizing of the dissemination of music said

> "The facilities they offer to composers and executants alike for reaching great numbers of listeners, and the opportunities they give those listeners to acquaint themselves with works they have not heard, are obviously indisputable advantages. But one must not overlook the fact that such advantages are attended by serious danger. In Johann Sebastian Bach's day, he had to walk ten miles to a neighbouring town to hear Buxtehude play his works ... The radio has got rid of the necessity which existed in Bach's day for getting out of one's armchair. Nor are listeners any longer impelled to play themselves, or to spend time on learning an instrument in order to acquire a knowledge of musical literature. The wireless and the gramophone do all that. And thus the active faculties of listeners, without which one cannot assimilate music, gradually become atrophied from lack of use." [21]

As these technical devices have been developed the degree of activity needed on the part of the listener has changed. 1877 was the year in which Thomas Edison built the first phonograph and in 1888 the first attempt was made to record classical music. Technical difficulties such as the limited time span for records - two minutes - restricted the recording of much serious music. John Philip Sousa and the United States Marine Band made many recordings and in the 1891 catalogue the only "serious" music example listed was an arrangement of Verdi's Il trovatore.

---

21 STRAVINSKY, I. Chronicle of my life, London, Victor Gallancz, 1936, p.247.

Technical developments allowed expansion of the length and quality of recording and in 1900 there were many arias and other opera selections available. Enrico Caruso made recorded classical music fashionable and profitable with the cylinders he made in 1901 and 1902.

The development of the larger twelve inch disc and then the two sided disc were important steps in the modern recording era. In the earlier 1900s (1910-1920s) popular music was the money maker and this allowed the record companies to increase their classical music listings. The capabilities of the recording and the playback equipment (168 - 2,000 Hz acoustical range compared with the range on modern equipment 20 - 20,000 Hz) also caused limitations. The range of classical music records available expanded with such recording partnerships as that set up by RCA Victor and Arturo Toscanini. This was responsible for introducing much art music to the American public. Record companies increased their repertoires during the good years at the end of the 1930s. The outbreak of the Second World War and a strike by studio musicians depressed sales in the early 1940s. The introduction of the LP record, stereo and more recently quadraphonic sound have all been important developments. Sound quality has improved with technical improvements and when the record companies have prospered they have at times been prepared to promote pieces that would be unlikely to make a profit.

The abundance of recorded music available means that musicians can now listen to almost any work in the entire history of western music, something which simply was not possible in any previous age. Listeners also can now in the space of a few hours and in the comfort of their own homes encounter music ranging from Plainsong through Bach, Beethoven and Berlioz to Stravinsky, Jazz and the Beatles. In addition a listener can listen to a choice of presentations of the same piece; as Charles Hamm points out

> "Anyone can now listen to Beethoven's Ninth Symphony more times in one day than most nineteenth century musicians were able to do in a lifetime of concert going." [22]

---

22 HAMM, C. "Technology and music: the effect of the phonograph" Contemporary music and music cultures. Englewood Cliffs, New Jersey, Prentice-Hall 1975, p.262.

Early in the production of records there was a prediction that live music would suffer because of the record. In fact this did not happen but instead the size of audiences increased. However, this increase could not be attributed entirely to the record. Classical record sales after the Second World War represented 40% of the total record sales but this percentage has fallen to about 5% due to the fact that although the number of classical records sold has remained constant, the total number of records sold has risen sharply. The introduction of the LP record produced a drop in public support for classical records but it did mean that buyers became less dillettanté. Hamm reports that

> "Various surveys tell us that these listeners rather than being totally dedicated to the record, are also concert-goers, perhaps in search of the extra dimension that live music offers." [23]

Konrad Nieman reported that in East Germany

> "The media are no obstacle to an active participation in music life. Growing concert attendance goes hand in hand with the spreading of records."

He records that since 1958 the attendance at symphonic and chamber music concerts has increased by 40%. Niemann notes that while concert attendance is growing, opera and operetta audiences have fallen and attributes this drop to television.[24]

The popularity of the radio and record has improved musical knowledge and the resulting interest has encouraged the growth of the number of performing groups and in better informed concert audiences. The net result is a great increase both in the amount of music available and in the quantity heard. While in general, contemporary composers benefit from more musically aware audiences,they find that there is great competition for the audiences' attention making it difficult to have their own music performed, listened to, understood and accepted. This happens because they are now in competition for time not only with other contemporary composers but also with composers from earlier centuries. While recorded music has had a profound influence both positively and negatively on contemporary listeners and composers, the development of the radio has

---

23 ibid, p.264.

24 NIEMANN, K. "Mass media - new ways of approach to music and new patterns of musical behaviour", New patterns of musical behaviour of the young generation in industrial societies, Ed. Irmgard Bontinck, Austria, Universal Edition AG, Wien, 1974, p.51.

also exerted a great influence on listeners. In Britain in the late 1920s and 1930s the BBC's policies emphasised quality and they gave serious music a greater outlet than any commercial institution would have done.

The Musical Times in July 1927 reported

> "One of the best features of the musical policy of the BBC has been its valuable salvage work. Hardly a week passes without the performance of several compositions that in the ordinary way would never be heard in public. . . Over and over again I have heard from the BBC studio unfamiliar compositions... their titles would never have drawn me to a concert-room, yet they proved far more enjoyable than many items that feature regularly in ordinary concert programmes. It is hardly possible to over-estimate the good work the BBC is doing in widening the listener's knowledge and repertory." [25]

The BBC devoted more time to this kind of music than could be justified on the basis of the public's existing preferences. Even so, serious music listeners persistently criticised what they considered was the

> "Predominance of bad music, the jazzing and guying of the classics; the detestable croonings, 'Harmonizings' and other vulgarities in vaudeville... and undue prominence given to cinema organs." [26]

They were critical of the time spent on "low brow" music, foreign music and any music that was not familiar. The use of the radio was recognized by composers and performers as being as essential for their financial security as the concert hall was in the nineteenth-century.

There was competition in the light music field for access to the new medium and special payments were made to singers and musical directors by publishers and writers to have works performed.

> "By 1939 it was clear that wireless, whatever effect it had in altering the tastes of the pre-radio music public, had created a new public all of its own... it was evident that 'the great unmusical class' would be a factor of considerable importance in the subsequent shaping of the music market." [27]

---

25 SCHOLES, P. A. "The Repertory expands", The mirror of music, vol.2, Novello and Oxford University Press, London, 1947, p.797.

26 PEACOCK, A. and WEIR, R. The composer in the market place, London, Faber music, 1975, p.65.

27 ibid, p.95.

During the Second World War the habit of listening to the radio became more widespread.

> "The BBC has always catered for music in leisure situations, but what was novel in 1940 was the new demand for music in work situations... In the same way that the Forces Programme was designed to increase morale and provide entertainment for the Armed Services, 'Music while you work' was intended to boost and sustain the efforts of the civilian labour force." [28]

Between 1942 and 1944 there was a marked increase in the number of classical records broadcast, a rise from 6% to 40% of the records played. At this time less than one third of broadcasting time was devoted to British composers, the rest was spent on more familiar classical music. The BBC in 1946 introduced the Third programme which was destined to serve the minority "Highbrow" tastes. After the war it was thought that this new audience for serious music would in the main be lost as people resumed peacetime pursuits. While the listener was quite well catered for with records, radio and later tape recordings, the content of the listening did not bridge the gap between the contemporary composers and the contemporary listeners. Concert programmes and lists of records made indicate that the old favourite classical composers took up a considerable proportion of the repertoire. This situation has persisted as studies show. Hamm reports that

> "a summation of a recent year's 'New Listings' in the monthly Schwann's Long-Playing Record Catalogue showed almost as many new recordings of Mozart as of all twentieth-century composers combined. More significantly, after one subtracts the recordings of such old and now-established men as Stravinsky, Prokofiev, Bartok and Schoenberg, the figures reveal an almost general disregard of new contemporary music." [29]

J. H. Meuller writing about the American Symphony orchestra repertoire between 1875 and 1950 records that Beethoven, Brahms, Wagner, Tchaikovsky, Mozart and Bach have maintained their popularity, Haydn, Handel, Weber and Gluck have high traditional prestige and low stable popularity. Meuller lists other groups of composers who have ascended and descended in popularity. In all he found that 40% of the repertoire of American orchestras is from the six top composers.[30]

---

28 ibid. p.97.

29 HAMM, C., 1975, op cit, 266-267

30 MEULLER, J. H. The American symphony orchestra - a social history of musical taste, London, John Calder, 1958, 437p.

P. R. Farnsworth studied the Boston Symphony Orchestra between 1955 and 1965 and found the most popular composers were Beethoven, Mozart, Brahms, Bach and R. Strauss. The analysis Farnsworth carried out of the Pacific Gas and Electric Company's broadcasts of 1941-43 showed that Beethoven, Tchaikovsky, Brahms, Mozart, Bach, Sibelius, Wagner, Schubert and Schumann were the most popular.[31]

The same picture is shown in F. R. Blanks' survey of 3000 concerts in Sydney between 1948 and 1974 when Bach, Mozart, Schubert, Beethoven, Brahms and Schumann were the six most popular composers.[32]

Silberman reports a French researcher's (A. Moles) results that of 500 works by 100 composers heard by 9999 radio listeners 14 were pre-eminent, Mozart, Beethoven, Bach, Wagner, Brahms, Schubert, Handel, Tchaikovsky, Verdi, Haydn, Schumann, Chopin, Liszt and Mendelssohn.[33]

Wayne Winter's study showed that in a survey of record borrowing and of the repertoire of music presented by Christchurch orchestral and choral groups, the same group of composers was the most popular. A survey by Winter of composers broadcast (1977-78) over the Radio New Zealand Concert programme revealed the same preferences; Beethoven, Mozart, Bach, Schubert, Brahms, Haydn and Tchaikovsky all appear within the first ten composers.[34] Television's music programmes appear to follow the same patterns.

Helm reports on an analysis carried out on Festival Hall, London. Normally there was an average of 890 empty seats per concert out of a total of 2900 but when the orchestra departed from the "hackneyed" repertoire the empty seats rose to 1230.[35]

---

31 FARNSWORTH, P. R., The social psychology of music, 2nd ed. Iowa, The Iowa State University Press, 1969, p.144-145.

32 BLANKS, F. R., "A musical popularity poll", Musicology iv Dec. 1974, Musicological Society of Australia, p.57-63.

33 SILBERMAN, F. N., The Sociology of Music, London, Routledge and Kegan Paul, 1963, p.149.

34 WINTER, W., Music and taste: an investigation into the processes of musical communication, unpublished M.A. thesis, Canterbury University, 1978.

35 HELM, E. G., 1970, op cit, p.153.

These repertoire surveys only deal with one type of concert, namely those consisting of serious music. Since the Second World War there has been the rise of the popular music concert. While the pop music listening repertoire is more accessible to listeners (as it does not demand the high degree of listening skill that is needed for the serious music listening) the composition of these different audiences is not solely determined by the individual's taste but is due also to sociological factors. Simmel points out that the connection between sound patterns and emotion is socially learned and that there is a strong association between a person's socio-economic status and their appreciation of musical styles.[36]

A BBC survey on serious music found that there were

> "very distinct correlations between social class and musical knowledge and, even more marked, between social class and musical taste." [37]

"Tastes" H. Blumer says

> "are formed in the context of social interaction, responding to the definitions and affirmations given by others." [38]

Baker found in her New Zealand study that her proposition

> "that socio-economic status is the major determinant of music preferences, (whether these be active or passive), was supported".[39]

This was evident in the choice of instruments learned and also in the music listened to. Baker found that 90.9% of the higher socio-economic group in her sample preferred listening to serious music. This result agrees with the results of the other writers Schuessler[40] and Conyers[41]

---

36 SIMMEL, G., The conflict in modern culture and other essays, N.Y. Teachers' College Press, 1968.

37 HELM, E. B., 1970, op cit, p.154.

38 BLUMER, H., "Fashion: from class differentration to collective selection", The Sociological Quarterly, vol.10, 1969, p.275-291.

39 BAKER, A. E. C., The formation of music preference: the relationship between certain personal status variables and aspects of music preference, unpublished M.A. thesis, Canterbury University, 1977 p.77.

> "who both noted serious music as largely a preference of higher status groups, and the association of other types of listening preference with status groups in a positive relationship: that is, the lower the music in intrinsic merit, the lower the status group it was associated with." [42]

Baker found in her study that with some music such as jazz and blues, rock, rock folk, pop, brass band and country and western no particular socio-economic relationships were observed. The difference between her results and those of the empirically validated studies mentioned earlier, Baker concluded could be a function of her sample who were learners and performers. (Scheussler noted that results tended to differ when music learners were surveyed).[43]

Denzin suggests that the popularity of certain works may be more usefully studied as a manifestation of fashion with the associated changes that such an idea brings. He suggests that adherents of a fashion associated with a particular artist, production or style gain identity and a focus of social relationships from that fashion.[44]

A Swedish survey carried out by Peter Arvidson relating music preferences with age and socio-economic status found that

> "classical music and to a lesser degree jazz hold a better position in the higher strata [socio-economic level], whereas hit music, folk music and to a lesser degree pop music are better liked by the lower strata." [45]

---

40 SCHUESSLER, K. P., "Social background and musical tastes" American Sociological Review, vol.13, no.3, June, 1948, p.330-335.

41 CONYERS, J. E., "An exploratory study of the musical tastes and interests of college students", Sociological Inquiry, vol.33, no.1, see Winter 1963, op cit, p.58-66.

42 BAKER, 1977, op cit, p.88.

43 BAKER, 1977, op cit, 88-89.

44 DENZIN, N. K., "Problems in analysing elements of mass culture: notes on popular song and other artistic production". American Journal of Sociology, vol.75, 1970, p.1035-1038.

45 ARVIDSON, P., "On interest, activity and taste in music", New patterns of musical behaviour, 1974, op cit, p.148

Age was an important factor in determining musical tastes. Young people in Stockholm preferred recorded or taped music and music on radio, to television and live concert music. Arvidson commented that his study of music preferences in Swedish youth showed that their taste was "very restricted and determined" as 77% of the 15-19 age group preferred pop and jazz out of a choice of seven categories.[46]

Although there are evident benefits from the greater availability of music as provided by radio and record it can be seen that this may merely serve to reinforce a restricted musical diet. This ready availability of music has had another effect, that of encouraging the emergence of the passive listener described by Hindemith as a listener who

> "by his very nature can never be reached by any sincere endeavour of a musician; a listener who never existed in earlier times... of the most degenerate type, who is surrounded by music every minute of his daily life. When he first came in touch with this continuous stream of music, he enjoyed it as a musical treat. Then he got used to the permanent outpour of sound, and now he does not listen at all. Yet he wants to have this lulling noise, and the only time he feels uncomfortable is when by some mechanical defect his sound distributor ceases to emit its gifts. There is no question of quality, of characteristic expression, of ethical aims, of moral effects. Everything else disappears, if the one condition is accepted: a non-stop flow of faceless sound... Our musical drunkard's only meaningful move is to turn the faucet on in the morning and shut it off at night." [47]

One cannot however turn the clock back on these technological advances - they are with us to stay. The question is how best can they be used to encourage people to improve their listening skills and to expand the range of listening which they encounter.

The gap that has been described and documented between the contemporary composer and the contemporary listener is not the only gap to be found. There is also the gap between the listener and unfamiliar music. The symptoms of unfamiliarity with music are the same whether it involves contemporary music or early Renaissance music. The very narrow range of music which apparently constitutes the general concert repertoire throughout the western world means that a large percentage of music is

---

46 ibid, p.147.

47 HINDEMITH, P., A composer's world, Cambridge, Harvard University Press, 1952, p.211.

unfamiliar to many listeners. Thus the problem of the gap between the contemporary listener and the contemporary composer is only one aspect of the general problem of how any listener deals with music which is unfamiliar. Obviously the way any listener deals with unfamiliar music is going to depend on their basic attitudes. If they are adventurous then anything unfamiliar will be regarded as a challenge to be investigated. There is no guarantee that this investigation will lead to a lifelong relationship with that piece but it is certain that an eager open-minded attitude is much more likely to uncover the riches in a piece than a disinterested critical approach. The challenge to any music educator is to provide the conditions which will increase the listener's accessibility to a wide range of music.

Listeners come with basic attitudes from home, from a particular socio-economic grouping and from a sound saturated society. Because the space is economically determined it is filled with familiar sounds of limited variety rather than a well planned, widely varying, comprehensive soundscape.

The passage above identifies several gaps between groups as far as listening to music is concerned. The gap between the contemporary composer and the contemporary listener in its present form is a more modern phenomenon for the reasons suggested. The gap between listeners who favour a narrow repertoire and those who would like a more comprehensive one is due in large measure to the mechanisation of music which has occurred within the last hundred years. The gap between the serious or art music followers and the pop or light entertainment followers has also been widened by technological developments as well as by economic considerations.

While the home environment exerts a primary influence on the taste of pupils, the school is the major point at which pupils may be presented with an alternative musical diet.

THE SCHOOL SITUATION

The current school situation as far as contemporary music is concerned is in general the same as was reported at the UNESCO conference in Brisbane.

> "It was generally agreed that the communication gap between modern music and the majority of listeners was still far greater than it ought to be, even allowing for the confusion and the natural time-lag to be expected in the experiencing and understanding of new kinds of sounds: and it was felt that much of the blame belongs to educational systems which still largely neglect the music of this century (which is more than two thirds over) and the changing attitudes and techniques which create it, in favour of the music of the past. . . Familiarity with contemporary sounds needs to begin in the Primary School, and in the handling of them as well as in the hearing of them (often indirectly, as for example through Music and Movement): it cannot be left to Tertiary education to break a vicious circle." [48]

Graham Bartle reported that

> "The use of music of the twentieth century for listening is rare at primary level. It is less so in secondary classes with 48% of schools claiming to use examples, though these are largely confined to the use of Britten's The Young Person's Guide to the Orchestra and Stravinsky's Le Sacre du Printemps. It is important that school children be introduced to music as a lively and vital art of our own time rather than be left with the impression that all great music was written centuries ago." [49]

Ian Bradley found that several prominent music educators writing in music education journals affirmed his findings

> "that school children rarely experience serious contemporary music in the classroom... this is recognized as a serious deficiency in curricula planning."

Bradley designed a listening programme aimed at bringing an effective change in favour of contemporary art music and found that the specially designed analytical approach was effective. However, there was also a positive change in the group who only had repeated hearings without the analytical approach. Familiarity with the music obviously was the most significant factor.[50]

---

48 SENATOR, R., Music in tertiary education. Australian UNESCO Seminar Queensland, 1969.

49 BARTLE, G., Music in Australian schools. Australian Council Educational Research 1968, p.238

50 BRADLEY, I. L. "Effect on student musical preference of a listening programme in contemporary art music", Journal of Research in Music Education, vol.20, no.3, 1972, p.344-353.

Hugh Davies points out that the gap between composers and listeners will remain

> "until music education covers the music of this century as a normal part of the history of music: until then the listener must learn to use his ears like a man and try to understand what the composer is doing by compensating for his lack of training as best he can. Naturally the scope of twentieth century music is vast, when all the trends of the last sixty years are considered and nobody can hope to cover it thoroughly; but we must not let this situation appear to be the fault of today's composers by making them scape-goats for our lack of understanding or for our unfamiliarity with the work of their immediate predessors." [51]

C. S. Shramm reinforces the same idea when she says,

> "Physically and literally (the student) is in the middle of the twentieth century but only if he is exceptional, will he be psychologically ready to hear contemporary music as a genuine expression of experience and feelings which he knows and calls real." [52]

Sensitivity to contemporary music can be improved as Karen Zumbrunn found in a study with seventh grade students.

> "Teaching for musical appreciation through contemporary music alone, did increase the student's perception of aesthetic elements of contemporary music." [53]

She concluded that it was only through exposure to contemporary music that sensitivity to it can be developed. The inadequacy of nineteenth century music for preparing ears for contemporary music was obvious.

The difficulties facing the music educator are highlighted in a study by Warren F. Prince who found that despite a programme of directed listening which included non-technical analysis, twentieth century art music was less popular with junior high school pupils than music of other historical periods.[54]

---

51 DAVIES, H., "Die Reihe reconsidered 1", Composer, No.15, 1965, p.20-21.

52 SHRAMM, C.S. An analysis of the listening experience, unpublished Ph.D. thesis, Illinois, 1971.

53 ZUMBRUNN, K., "A guided listening programme in twentieth century music for junior high students", Journal of Research in Music Education, vol.20, no.3, 1972, p.370-378.

54 PRINCE, W. F., "Effects of guided listening on musical enjoyment of junior high school students", Journal of Research in Music Education, vol.22, no.1, 1974, p.45-51.

The New Zealand fifth, sixth and seventh form music examination syllabuses all have contemporary pieces included in the set works and for many pupils this is their first experience of listening seriously to such music. The author and other teachers who have been consulted have noted that although the response may vary, when the music is presented as a necessary part of the curriculum it is often accepted without negativity and indeed with repeated playings a real affection for it may develop.

Although in New Zealand music is included in the curricula for primary and intermediate pupils (age 5 to age 12) not all teachers feel confident to tackle teaching the subject and the comment made by Brocklehurst would apply to the New Zealand schools as well.

> "...so many primary school teachers lack confidence in their ability to teach music. Consequently the quality of primary school music is extremely variable ... [there is] generally a serious lack of continuity between music in primary and secondary schools." [55]

At the high school age (13 + years) the situation is less favourable for the introduction of new musical experiences (be they contemporary or merely unfamiliar) as the pupils are straining to join the ranks of the teenage sub-culture, with its gregariousness and prejudices. The sub-culture's character was influenced in the late 1950s with the creation of a teenage record market and the affluence which replaced the war-time austerity. New music was produced catering for the special teenage public and that special market has continued to be a profitable economic proposition. Brocklehurst identifies one of the problems that faces instigators of balanced listening programmes for teenagers.

> "The musical tastes of the immature are conditioned very much by prejudice and fashion, and the uniform tastes in 'pop' music may be regarded as a manifestation of young people's gregarious instinct, their desire to be accepted by the group and their fear of cultural isolation." [56]

---

55 BROCKLEHURST, J. B., Response to music: principles of music education, London, Routledge and Kegan Paul, 1971, p.96.

56 ibid, p.62.

Arvidson recognises that there is a teenage subculture but suggests that teachers should

> "consider the possibility that this particular kind of music [i.e. pop] is equal to other experiences and needs of a group (or individual) ... and that it has a 'function' in their social life."

He advocates playing all kinds of music to these people so as to enlarge their musical experience.[57]

The experience of the educators and writers outlined above indicates that there is a problem at the school level with listening to contemporary music. The particular programmes designed to improve familiarity and liking for contemporary music demonstrate that positive changes can be effected. What remains to bring about a general improvement in this direction is to ensure that music teachers themselves accept the challenge of the need to encourage pupils to listen with curiosity and expectancy to the music of our own time. Access to suitable programmes for introducing contemporary music with a progression from easy to difficult pieces would help teachers who are unsure of the subject to prepare adequately.

There is always likely to be some time lag between the appearance of new music and its acceptance, but in this age of electronics and the mass media the lag should be becoming less. At times it seems that the twenty-first century will be on us before the music of the twentieth century has been accepted.

The difficulties in increasing the concert hall repertoire unfortunately have quite strong economic implications. The policy of the programmers determines the limits to the programmes and all too often these decisions must be in favour of economic viability rather than following a policy of audience education. Programmers with a concern to make a wider range of music accessible are in a position to influence music experience. Widely ranging programmes presented by conductors who are effective communicators and backed up with helpful programme notes could have a very beneficial effect on concert attenders' music repertoires.

---

57 ARVIDSON, P., 1974, op cit, p.153.

To summarize, there can be little doubt that a gap exists between contemporary composers and contemporary listeners both as a result of the proliferation of musical styles and as a result of the developments in the mechanical reproduction of sound. Other gaps which cause concern are firstly the narrow concert and radio broadcast repertoires and secondly the limited musical diet of the teenage sub-culture.

However much the concert, radio and record repertoire may be deplored, it is obvious that because of economic considerations few changes are likely to occur until there has been a change in listeners' preferences. The obvious point at which some change in preferences could be brought about is through the school system. Unfortunately, too few educators acknowledge the necessity for programmes to extend listening habits, few resources are available and many teachers are not able or willing to use these resources. The aim of such a programme would not be to inflict a particular taste for one or two periods or styles of music but to enable pupils to have open-minded encounters with all types of music.

The development of effective resources for improving listening has often appeared to occur on a trial and error basis by individual teachers responding in isolation to the needs of pupils as they see them.

The lack of status that music is accorded by some educators together with the suspicion of some musicians of scientific method has resulted in a lack of research into music listening mechanisms and also an irregular and unsystematic development of listening skills programmes.

The suspicion that many musicians have towards scientific investigation is illustrated in this quote from Lundin

> "Many musicians have taken the attitude of 'hands off' toward psychological investigations in their field. Their attitude is based on the false assumption that musical responses are of a spiritual, unmeasurable sort coming directly from the soul of man, that the field of music is an area which, by its very nature, does not lend itself to scientific investigation, with of course, the exception of physical sound waves." [58]

---

58 LUNDIN, R. W., An objective psychology of music, 2nd ed. N.Y., Ronald Press, 1967, p.5.

Roederer reminds us that music, as an auditory stimulus reaching the brain, is processed using cerebral mechanisms as are other forms of stimulus.

> "Ultimately even aesthetic feelings must be somehow related to neural information processing." [59]

Interest in listening and whether or not binary and ternary forms could be identified led to the author's M.A. study[60] in which an account is given of the design and administration of a test involving these forms. The subjects used were intermediate school pupils and the results showed that these pupils were of a receptive age for music tasks and music learning. It was apparent that the above or any similar test which directs attention towards a particular feature in the music serves not only as a means of collecting data but as a training instrument as well.

R. M. Thackray[61] reported in the general conclusion to a series of music tests carried out by the University of Reading that

> "on every occasion when children took a 'test', teachers reported first on the enjoyment and satisfaction the children derived from it, and, second, on the value they considered the children gained from it. It was often felt that some of the 'tests'... were as valuable as direct teaching."

The author's continuing interest in music listening and concern at the lack of ongoing research into this area led to the present study in which another related aspect of listening is investigated by means of a test. Recognition in music was chosen as the topic because the apprehension of formal procedures is dependent on recognition skills.

---

59 ROEDERER, J. G., Introduction to the physics and psychophysics of music, 2nd ed., N.Y., Springer-Verlag, 1975, 200p.

60 WALLACE, M. J., Listening to form in music, unpublished M.A. thesis Otago University, 1970.

61 THACKRAY, R. M., Interim report, Some research projects in music education, University of Reading, 1974, p.126. Permission to use material obtained from Dr. R. M. Thackray.

RESEARCH BACKGROUND ONE

THE SECOND HEARING RECOGNITION OF MUSIC TEST

THE SECOND HEARING RECOGNITION OF MUSIC TEST

The need to help listeners improve their skills especially in relation to contemporary music has been demonstrated in the previous section and points to the necessity for obtaining a clearer understanding of the actual process of listening. Since the area that requires researching is so vast there may seem little point in conducting as limited an investigation as this study. However it must be remembered that music is no exception to the general rule that science normally only progresses after a great deal of research, within very limited areas, much of which may finally have no practical application at all.

An ideal test is one which is of sufficient length to provide reliability, one in which the material used is valid, the reproduction of the test adequate, the instructions clear, the answer sheet easily understood and so on. While all actual tests have their limitations, music tests usually have more than their fair share because of the difficulty in controlling the variables in an activity as complex as music.

This test was designed as a research instrument to investigate a particular aspect of the listening process so that through a clearer understanding of the mechanisms involved more suitable music education methods and resources might be provided. The test also provides a situation in which the listening sequence can be observed and the problem areas of listening discussed with the pupils. The insights gained in this test may well be capable of being applied to the wider field of listening in general.

The Choice of Recognition

Recognition (one of the facets of memory) was selected as the area for investigation because (i) it is basic to the listening task, (ii) it appeared to be the simplest task capable of being investigated by the "which one did you hear" question, i.e. the pupils would not be asked to describe what they had heard, or asked to reproduce it, but simply asked "which of these is the piece you heard".

The centrality of recognition to the music listening task is well illustrated by the following quotations. Aaron Copland writing about recognition said,

> "The melody is generally what guides the listener. If you can't recognise a melody in its first appearance and can't follow its peregrinations straight through to its final appearance, I fail to see what you have to go on in listening. You are just vaguely aware of the music. But recognising a tune means you know where you are in the music and have a good chance of knowing where you're going. It is the only *sine qua non* of a more intelligent approach to understanding music." [1]

Bairstow makes the same point -

> "Any pleasure to be derived from a reprise depends upon the musical memory of the hearer; for if the likeness of the hero has been forgotten, his return will not be recognised." [2]

Recognition of musical ideas when they are repeated in whole or part is essential if there is to be any appreciation of musical form. Repetition is of no value if there is no recognition.

Brocklehurst, demonstrating the centrality of repetition and by implication the necessity for recognition skills, says

> "Repetition has a dual function in music; aesthetic and psychological. Repetition is aesthetically necessary in order to achieve balance, symmetry, unity and cohesion: regular pulsation, imitation, canon and fugue, ostinato, repeated and double expositions, recapitulation, ternary and rondo forms and serial techniques all embody the repetition principle, and sequence, ground bass, theme and variations, development, thematic transformation and concerto cadenzas illustrate the fusion of the twin principles of contrast and repetition. . . In so intangible an art form as music repetition is also a psychological necessity. Although . . . repetition is a built-in feature of musical forms and devices, it would be unreasonable to expect a piece of music to be assimilated at a first hearing: controlled purposeful repetition is necessary if understanding and liking are to develop. . . Carefully spaced repetitions should be arranged. New listening points should be suggested each time." [3]

---

1 COPLAND, A., What to listen for in music. Rev. ed. N.Y. McGraw Hill 1963. p.17.

2 BAIRSTOW, E. C., The evolution of musical form, Oxford University Press, 1943, p.36.

3 BROCKLEHURST, J. B., Response to music: principles of music education London, Routledge and Kegan Paul, 1971, p.128.

Recognition can thus be seen to be an important feature in music listening.

Having selected the area for testing, the means of investigation was chosen. It was decided that the recognition task would involve the presentation of a piece of music which would then be re-presented along with three other pieces in a random order. The recognition of the original piece was the desired response.

The test was called the "Second Hearing Recognition of Music Test" (subsequently referred to as SHRMT).

Like many other exploratory research instruments the SHRMT has its weaknesses but it does produce insights into the nature of the listening process, provide implications for music education and point to areas which need further scientific investigation. While some of its weaknesses are endemic to tests using actual (or "proper") music others like the level of difficulty (discussed later) are more specific to this test.

The difficulty in testing in the area of music is brought about by the complex nature of music consisting as it does of a number of simultaneous variables such as a melody, a succession of pitches and a series of durations forming the rhythm. When actual (or "proper") music is being used in a test it is therefore virtually impossible to satisfy the desired scientific standard of holding constant all the variables except the one being investigated.

The next consideration was the kind of items to be used in the test, quasi-musical or musical. A review of research reveals that there are two schools of thought as the following quotations show.

Against the quasi-musical tests Desmond Sergeant writes

> "psychologists have found the atomistic approach unsatisfactory . . . because various studies have repeatedly revealed that perceptions of the various parameters of musical sounds are inter-dependent." [4]

W. C. Wilson in a survey of musical tests commented that atomistic tests were merely tests of musical acuity.[5] J. L. Mursell points out

---

4 SERGEANT, D., "Measurement of pitch discrimination", Journal of Research in Music Education, vol.21, no.1, 1973, p.3-19.

5 WILSON, W. C., Some inter-relations of verbal and musical abilities in elementary school children. Unpublished thesis, University of California, Berkley, 1960.

> "We do not merely receive stimuli through our ears. We organise them into patterns and relationships because of the operation of our minds. And what we actually hear is not the sensations imposed on us from outside, but the organised patterns derived from the action of the mind upon the data from without." [6]

J. B. Davies on the other hand, used quasi-musical and non-musical material in a test of musical aptitude as he was endeavouring to provide a test which did not favour those who already had some musical knowledge. In an article supporting his use of this material he quotes Anastasi 1961

> "It should be noted in this connexion that the test items need not resemble closely the behaviour the test is to predict. It is only necessary that an empirical correspondence be demonstrated between the two." [7]

Kate Hevner Mueller in describing her investigation (the Oregon test) compares it with "The usual studies by psychologists," which "employ less complex stimuli and often use more sophisticated subjects." For her study

> "it seemed feasible to stay closer to the standard musical materials, to the amateur listeners and to the group methods which might be more immediately related to the ultimate problem of teaching lay audiences to understand music." [8]

John McLeish[9] found that the psycho-physical tests of Seashore, and the piano tests of Wing, both measured the same thing equally well.

The fact that both types of item were used successfully in these tests of musical ability by Seashore and Wing, indicates that it is not essential to use straight musical examples in order to measure musical qualities. It is interesting, however, to find that the Oregon test,

---

6 MURSELL, J. L., The psychology of music, N.Y., Norton, 1937, p.50.

7 DAVIES, J. B., "A new test of musical aptitude", British Journal of Psychology, vol.62, no.14, 1971, p.557-563.

8 MUELLER, K. H., "Studies in music appreciation", Journal of Research in Music Education, vol.4, 1956, p.18.

9 McLEISH, J., "Musical cognition", Music education research papers no.2, London, Novello 1968.

which was also included in his three test comparison, appeared to be the best measure of musical ability. The items in the Oregon test involved piano pieces which were altered, to provide variants.

Lehman[10] predicts tests are likely to become more musical and less atomistic in the future. The question then was, should the items in a music recognition test consist of "proper" music rather than "quasi musical" material?

As the study was concerned with listening to "real" music and there were no compelling arguments to suggest that quasi-musical material measured responses better than musical material the decision was made to produce items of "proper" music. "Proper" music means here, music that is not merely satisfying a set of criteria for a test design but is music that could be used in some musical context as an idea to be answered, developed, varied and so on - an idea capable of having a life of its own.

Support for this decision came from B. Inhelder.

> "Traditionally, studies of memory have been conducted in such a manner as to maximize the singular, fortuitous, if possible the senseless, e.g. nonsense syllables. It was argued that memory would reveal itself the purer the more completely it is deprived of any real significance. In actual fact, memory is never like this in real life, it is always the outcome of some previous action"[11]

As a result of these considerations all the items of the SHRMT consisted of "proper" music specially written so that there was no chance of any subject having an advantage as a result of hearing any of the music previously.

The Construction of SHRMT

Having selected one aspect of listening for investigation the test was constructed. As already noted the means chosen for testing recognition was by the initial presentation of a prepared piece of music, called the "original" followed by its re-presentation together with three distractors, called the choices, in a random sequence. The pupils were

---

10 LEHMAN, P. R., Tests and measurements in music, Englewood Cliffs, New Jersey, Prentice-Hall 1968, 99p.

11 INHELDER, B., "Memory and intelligence in the child", Studies in cognitive development, Essays in honour of Jean Piaget, ed. Elkind and Flavell, N.Y., Oxford University Press 1969, p.337-364.

asked to identify which of the subsequent pieces was the "original". In order to present the recognition task in a variety of musical settings four areas within the field of music were chosen. Shape (melody), Rhythm, Texture and Timbre. Sub-tests involving items based on each of these four aspects were constructed. In each of the Shape, Rhythm, Texture and Timbre sub-tests once the original was composed the distractors were written. These consisted of systematic alterations appropriate to the particular character of the sub-test. For example in the Shape sub-test alterations were made to the range of notes of the piece. In each sub-test three different lengths of item were used, short 6-7 notes, medium 12-13 notes and long 21-22 notes. It was expected that the response to the length would reveal information about listening strategies and effective lengths for different aspects of music.

The random order of the position of presentation of each item of the "original" and "choices" and of the items within each subtest was achieved by the use of Latin Squares (see Appendix D, p.219)

The fact that a number of aspects were being considered in a small number of items was not conducive to high reliability but as this test was conceived as a research instrument one of its main purposes was to produce results which would point to areas for future investigation. Preliminary Testing had suggested two lines for investigation for the Shape or Melody sub-test, namely the maintaining of the general shape while allowing for some intervallic alterations and also the identification of the range of notes established by the piece.

Bearing in mind the search for reliability on the one hand and a suitable test length on the other, fifteen items for each of the four sub-tests Shape, Rhythm, Texture and Timbre were composed by the author in accordance with the design requirements. The originals were constructed in the three chosen lengths. The items were then practised and taped. (See Appendix C, p.198 for the music).

Preparation of the Tape

Unfortunately at the time of the preparation of the tape the Music Department of the University was still occupying an old house at the old University site in the city and was awaiting the move to its new building at Ilam. This meant that there was no suitable equipment available at the University for the recording task. Quotes were obtained from several sources but these were too high because of the time involved in hiring studios and so on and so the tape was made at night in one of the Secondary

Division, Teachers' College music rooms because the buildings were not free or quiet enough at other times. The equipment had to be brought to the College for the purpose, for at that stage the College was still in the process of acquiring suitable equipment for the new building it had recently moved into.

The piano music was played by a very competent pianist and the players for the timbre items were mostly performance students in the Music Department. The rehearsal and the taping of the timbre items was not as easy as it would have been in the present building. The script for the tape is in Appendix A, p.185.

The equipment used for recording the music was an Akai GX 365 and it was recorded on four track mono.

The tape was administered to a Pilot sample of Form 1 pupils at Branston Intermediate School. The papers were marked and the results assessed. An item analysis using the "d" item analysis was undertaken.[12]

The results showed that the items tended to be too difficult. The inclusion of fifteen items in each of the sub-tests made the tests slightly longer than was desirable and so three items were removed from each sub-test bringing the length of each test to about twenty minutes. In order to keep the correct balance of short, medium and long items, one item from each category was dropped. A few of the Shape and Rhythm items were rewritten and then retaped.

As this investigation was designed to study the errors recorded it was important to have sufficient error results for Chi square cell purposes. However while the error requirements were met, the test does contain too many difficult items for it to be regarded as well balanced.[13] Ideally further revisions of the items would have been conducted but due to the difficulties encountered with taping, with sound equipment and with sample numbers, this was not possible.

The importance of error responses in this study is that they are treated as sources of information for clues to the strategies pupils use in answering the questions. By manipulating the construction of these distractors some of the more noticeable features of different aspects of the music can be isolated. If a preference pattern is established for a particular set of distractors it is important to attempt to identify the features that made them virtually undistinguishable in the pupils' minds from the correct answer.

---

12 See Anstey Psychological Testing, Chapter 9 and Appendix 8, London, Nelson 1966.

13 See Appendix E p.220 for tables showing Item Analysis data.

Validity

The SHRMT has Content Validity because the items were constructed so that they satisfied the requirements of each sub-test and matched the various hypotheses being tested.

The SHRMT has Construct Validity as shown by the results of the factor analysis. The four sub-tests and the total cluster in the first factor showing that they share some common factor. All of the four sub-tests involve a recognition task, although the distractors within the items, are operating on different musical aspects, for example shape, place of alteration, change of accompaniment and instrumental groupings.

No other measures of recognition of music as such, with which the SHRMT could be correlated were known to the author. The Melodic and Rhythmic sub-tests of the Wing and Bentley tests involved some recognition aspects, but these were not identical with those of the SHRMT. (Refer discussion in Shape, Rhythm sub-test sections).

Reliability

The reliability for each of the sub-tests was calculated by using the corrected Spearman Brown Split-Half technique with the following results

Shape	.53 [14]
Rhythm	.54 [15]
Texture	.63
Timbre	.61

These reliabilities are lower than desired but the sub-tests do fall within the range given by Leonhard and House[16], .50 - .69 which are described as low; inadequate for individual measurement but of some value in group measurement. The total reliability was calculated using the formula $\frac{n \times r}{1 + (n-1)r}$ from Cronbach[17], giving a result of .73. The

---

14 The Shape sub-test reliability is the same as that given for the melodic memory sub-test of Bentley's test.

15 The Rhythm sub-test's reliability at .54 is a little lower than that of Bentley's at .57.

16 See SHUTER, R., The psychology of musical ability, London, Methven, 1968, p.22.

17 CRONBACH, L. J., Essentials of psychological testing, N.Y., Harper 1949.

reliability of the total falls within the range .70 - .79 which is described as rather low; adequate for group measurement but of doubtful value in individual measurement.

On reflection the low reliability of the tests could be due to the fact that each of the four sub-tests consisted of only 12 items. A higher number of test items, contributes to higher reliability as various educational and psychological texts point out.

The design of the test would also contribute to the low reliability, as in an effort to establish the significance of different types of alterations to the distractors, the overall material was more heterogeneous than homogeneous and the inter-item consistency was therefore lower. The level of difficulty was also harder rather than easier. (See the tables in Appendix E, p.220). It was important however, to have a reasonable number of entries in the errors for the purpose of this investigation in order to satisfy Chi square requirements. Because of taping and pupil sampling difficulties it was not possible to adjust this balance between correct and incorrect answers.

The fact that the pupil sample was relatively homogeneous, being only two classes, Forms 1 and 2 (ages 11-12), would also contribute to the lower reliability. Because of the difficulties in the production of the tape it was not possible to make an alternative form of the test, and a test re-test procedure would have involved extra sessions with the classes chosen. This was difficult because the sound equipment used for the administration of the test was loaned for the exercise as neither of the schools possessed equipment that was adequate. The Reliability of the test was considered acceptable for this study.

BACKGROUND TO THE SHRMT SUB-TEST CONSTRUCTION 1 - SHAPE OR MELODY

The first sub-test involved the recognition of the shape, melodic outline or contour of a succession of notes. Melody is a basic element in music and in the literature examined concerning the development of musicality in children is together with rhythm one of the first aspects discussed. Zimmerman[18] concluded from her research about young children that melodic and rhythmic discrimination developed at the same time and improved with an increase in age and the improvement of the memory span.

---

18 ZIMMERMAN, M. P., "Musical characteristics of children", Research in the music classroom, no.1, Washington D.C., Music Education National Conference 1971.

Shuter[19] reviews the development of musicality in children quoting research which demonstrates the basic importance of melody. Bentley[20] gives an account of the development of melody and suggests several stages that are discernable in melodic development. The melodic aspect in most music is the simplest to follow and certainly for less sophisticated listeners the major difficulty found with contemporary serious music is the absence of a tune.

> "Of all the components of a piece of music, the melody is essentially the most immediately appealing. Melody lies on the surface of the music . . . and is the element which most often gives a composition its distinctive character or special qualities . . . A particular rhythm may be shared by hundreds of compositions . . . only the melody is unique." [21]

The degree of importance of the melodic aspect in music may be debated but not its existence. Its importance may fluctuate but as Friedrich Blume says of Classic-Romantic music, it "lives by melody, its subtlest and most vital component."[22] Charles Rosen in writing about the sonata pointed out that since Czerny it "had been most often defined as a melodic structure."[23] Now while all kinds of learned arguments may be presented to refine such statements the fact still remains that for many listeners, and especially those less sophisticated, the presence of a tune or melody which can be recognised, is central. In the popular or entertainment music heard so frequently on radio or television, the melodic element is of great importance. While the relative importance of melody in much twentieth-century serious or art music has changed and many such pieces could be described as being mainly time and rhythm pieces, or timbre and colour pieces, rather than melodic and harmonic pieces nevertheless all listeners whether sophisticated or not, will be used to listening to the melodic aspect.

---

19 SHUTER, 1968, op cit. p.61-76.

20 BENTLEY, A., Musical ability in children and its measurement, London, Harrap, 1966, p.21-28.

21 ULRICH, H., Music: a design for listening, 3rd ed. N.Y., Harcourt, Brace and World, 1970, p.16.

22 BLUME, F., Classic and romantic music, London, Faber and Faber, 1970, p.45

23 ROSEN, C., The classical style, London, Faber and Faber 1971, p.30.

Definitions

The word "Shape" was used as the name of this sub-test in preference to "Contour" or "Melody" for the reasons listed below. Although research writings quoted in this study use the word Contour (meaning outline or pattern of ups and downs) the word has been avoided because many of the contour experiments dealt with limited features of music such as pitched notes presented under very controlled conditions rather than as part of a musical phrase. Shape is used in preference to melody because in popular usage melody refers to sounds which are pleasing to the ear while in much recent serious (art) music the melodic or thematic material may be of an angular and dissonant nature which some listeners would not consider to be "pleasing to the ear". This popular usage is confirmed in the Collins New English Dictionary which defines melody as "a rhythmical succession of single sounds forming an agreeable musical air; a tune."

In other definitions of melody this emphasis on the popular understanding of the word is absent.

> "Melody, like so many other concepts in music, is very difficult to define. But it is clear that a melody is made up of successively sounded intervals and must have some sort of organisation . . . Theoretically speaking, any sequence of tones could conceivably constitute a melody for some culture group. But at any time and place only a fraction of the many possible will receive official approval." [24]

Bentley describes melody as a "succession of pitch sounds within a rhythmic framework," and states "in its basic form, music is melody." In the summary of the basic assumptions underlying his tests he writes:

> "the most elemental form of music is the melodic phrase or figure, which comprises tonal configuration within a rhythmic network." [25]

Lundin[26] collected a number of definitions of melody and isolated some of the main attributes which he lists as Propinquity, Repetition, and Finality. For the purposes of this study, shape (melody) is defined as a rhythmical succession of pitched notes.

---

24 FARNSWORTH, P. R., The social psychology of music, 2nd ed. Iowa, Iowa State University Press 1969, p.47.

25 BENTLEY, 1966, op cit. p.24, 40.

26 LUNDIN, R. W., An objective psychology of music, 2nd ed. N.Y., Ronald Press, 1967.

Melodic Memory Tests

Many tests of musical ability and aptitude have sub-tests involving musical memory. Wing[27] and Bentley[28] included melodic memory sections in their tests (measuring musical intelligence and musical ability respectively) and these involved the identification of the note changed when the item was played for the second time. In the Drake[29] Musical Aptitude tests the musical memory measure involved the remembering of a two bar melody which was subjected to key, time and note changes. As the items progressed the changes were more numerous so that in the last item the subject had to compare seven variants with the original.

The Seashore test[30] had pairs of tonal sequences and the subject had to say which note was different in the second piece. The Kwalwasser-Dykema music test[31] had similar pairs of tonal sequences and the task set was to indicate whether the second of the pair was the same or different from the first. The Gaston Test of Musicality[32] and the Whistler and Thorpe Musical Aptitude Test[33] had sections with similar tasks.

The aspect of memory being used in these tests is that of recognition. Some of the tests mentioned consisted of a straight recognition task while others involved the identification of the particular note which was different in the second playing.

The SHRMT Shape or melody sub-test is a recognition test that calls for the identification of the "original" when it is re-played along with three distractors (called the "choices"). No precise identification of the notes altered is asked for. The items satisfied the broader definition of melody, namely that a melody is a rhythmical succession of pitched sounds.

---

27 WING, H. D., Manual for standardised tests of musical intelligence (City of Sheffield Training College, Ref. 600), 1960.

28 BENTLEY, 1966, op cit.

29 DRAKE, R. M., Manual for the Drake Musical Aptitude Tests, Chicago Science Research Associates, 1957.

30 SEASHORE, C. E., LEWIS, D. and SAETVEIT, J. C., Manual of instructions and interpretations for the Seashore measures of musical talents, 2nd Rev., N.Y. The psychological corporation 1960.

31 see WHYBREW, W., Measurement and evaluation in music, Dubuque, Iowa: Brown 1962.

32 GASTON, E. T., A test of musicality, manual of directions, Lawrence, Kansas: Odell's Instrumental Service 1958.

33 WHISTLER, H. S. and THORPE, L. P., Musical Aptitude Test, Los Angeles; California Test Bureau, 1950.

Research Findings - Contour and Scale

Recent research has produced some interesting findings on the recognition of melodies which have undergone various transformations involving contour. The transformations used have been octave ones, exact intervals, or ones that have reduced the interval to one octave, for example C_3 to D_4 would be counted as being a basic C to D interval. D. Deutsch[34] found that with octave distortions, well known tunes could not be recognised. Dowling and Fujitani[35] found that distorted melodies could be recognised if the contour was maintained. Recognition was better, however, when successive intervals were also preserved. Dowling[36] reported that when melodies were subjected to various transformations, subjects were no more accurate in recognising transformations which preserved exact interval relationships than transformations which preserved melodic contour. Thus it is evident that the contour on its own is a very basic and important feature of a melody. Dowling[37] asserts that contour is an abstraction from the actual melody that can be remembered independently of pitches or interval sizes. Contour and scale are the two components that are present in the normal process of melody recognition.

Idson and Massaro[38] found that when the contour was violated the perception of the melody was severely disrupted. Their results argued that contour as well as interval magnitude was providing essential information for melodic perception. White[39] reported that subjects were quite sensitive to the preservation of the relative degrees of contour. He found that with a little training, subjects could recognise melodies using micro-intervals which preserved the contour.

---

34 DEUTSCH, D., "Octave generalisation and tune recognition", Perception and psychophysics, vol.11, 1972, p.411-412.

35 DOWLING, W. and FUJITANI, D. S., "Contour, interval and pitch recognition in memory for melodies", Journal of the Acoustical Society of America, vol.49, 1971, p.524-531.

36 DOWLING, W., "Recognition of melodic transformations, inversion, retrograde and retrograde inversion", Perception and Psychophysics, vol.12, 1972, p.417-421.

37 DOWLING, W., "Scale and contour: Two components of a theory of memory for melodies", Psychological Review, vol.85, no.4, July 1978, p.341-354.

38 IDSON, W. L. and MASSARO, W., "A bidimensional model of pitch in the recognition of melodies", Perception and Psychophysics, vol.24, no.6, December 1978, p.551-565.

39 WHITE, B. W., "Recognition of distorted melodies", American Journal of Psychology, 73, 1960, p.100-107.

Teplov[40] reported on work by several Russian and German researchers concerning the development of a child's perception of melody. They found that the recognition and reproduction of the melodic contour is the first stage in the child's development and that the recognition and reproduction of the particular intervals is the second.

Jones, Maser and Kidd[41] found that if the octave distortions of the piece maintain the contour, the recognition will be as good as that for the original. They found that if the intervals of a piece are widely spaced it may be that the piece is heard as two tunes, "streaming" as they described it. Bach's solo instrumental pieces are good examples of such music.

White used some reversed melodies and found that these were recognised by the subjects better than would be expected if they were guessing randomly. Dowling[42] experimented with transformations using Inversions, Retrograde and Retrograde Inversions and found that subjects did recognise them better than chance. He used five note figures and found that the subjects did better if the presentation was slower. If the rhythm was altered, recognition was more difficult. White considered that if the rhythm in a melody was stereotyped, the piece which had melodic distortions might be recognised by its rhythm. Tovey[43] doubted that Retrograde and Retrograde Inversion were perceived effectively and considered that they were like the riddle canons found in Bach. Tovey thought that recognition in those cases would be by rhythm rather than melodically.

Jones, Maser and Kidd used sequences of eight notes and found that fast patterns with many large pitch distances were more difficult to recollect. These researchers reminded readers that listeners approach the listening task with different expectations generated because of their backgrounds.

---

40 TEPLOV, B. M., Psychologie des aptitudes musicales, trans. Deprun. Paris: Presses Universitaires de France 1966 - reported by Shuter 1968, op cit, p.70-72.

41 JONES, M. MASER, D. J. and KIDD, G. R., "Rate and structure in memory for auditory patterns", Memory and cognition, vol.6, no.3, May 1978, p.246-258.

42 DOWLING, 1972, op.cit.

43 TOVEY, D. F., The forms of music, Cleveland, World Publishing Co. 1956.

> "As we listen to a music-like sequence unfold, we generate certain expectancies about future pitch and tone relations. When these expectancies are fulfilled, pattern recognition should be more accurate." [44]

This idea of expectancies in music links up with the philosophical writings of people like Leonard Meyer[45] who deals with listeners' expectancies based on previous encounters with music. Thomas and Fitzgibbons[46] point out that successive sounds, as in a melody, are linked by complex sets of rules which are characteristic of a particular musical community. Carlsen[47] suggested that there could be different cultural expectancies with regard to melodies and found in his research that there was a cultural difference in response to a particular task which required the continuation of a melody. Subjects from Hungary, Germany and the U.S.A. participated. Particular musical communities such as found in the Baroque or Classical eras followed particular procedures and it is interesting to see that they practised the exact transposition of themes or with some intervallic alteration. Bach uses these transformations constantly in his fugal writings. Such transpositions were also commonly used by composers, for example Beethoven in his development sections.

Deutsch reminds readers of the importance of background musical learning.

> "The mapping of pitch information on to scales with strong *a priori* and *transitional* probabilities is of fundamental importance to musical memory as it enables us to make use of a fund of highly learned information in recalling or recognising a given sequence. It has been demonstrated experimentally that short-term recognition of melodic patterns is greater when the melodies are in our tonal system than when they are not." [48]

---

44 JONES, M. MASER, D. J. and KIDD, G. R., op cit.

45 MEYER, L. B., Emotion and meaning in music, Chicago, University of Chicago Press, 1956, p.307.

46 THOMAS and FITZGIBBONS, "Temporal order and perceptual classes", Journal of the Acoustical Society of America, vol.50, 1971, p.86-87.

47 CARLSEN, J. C., A cross-cultural study of perceptual expectancy: A measure of musical behaviour. Paper presented for fifth International Seminar on Research in Music Education, Mexico City, 1975.

48 DEUTSCH, D., "Memory and attention in music", in Music and the brain, Eds. Critchley and Henson, 1977, op cit, p.114.

Recognition of a melodic sequence is enhanced if the context establishes the tonality. This may be one of the reasons why twentieth century art music is preferred less than music of other periods, as Prince[49] found in a study using Junior High School pupils. Unfamiliarity is undoubtedly another important factor.

Concerning the tonal system, Dowling makes the point that

> "Tonal scales constitute one of the most durable families of perceptual-motor schemata that have been observed in psychology ranking perhaps only after the schemata of natural language in their stability and resistance to change in adult life." [50]

Dowling quotes Zenatti[51] who found that as far as the recognition of tonal and atonal tunes went, 5 year old children had difficulty with both because they had not internalized the scale thoroughly, 8 year olds recognized 3 note tonal melodies much better than atonal, but 11 year olds found both equally easy. Longer atonal melodies were found to be more difficult.

Deutsch[52] reported

> "The principle of octave equivalence forms an important basis for the traditional musical scale . . . Octave duplications also occur cross-culturally and the principle of octave equivalence may be regarded as a universal musical phenomenon."

Transposition is also not culture dependent.

Deutsch concluded as a result of her work on different interpolated notes in sequences between two test notes, that

> "substantial effects on memory performances are produced by including in an interpolated sequence, notes of the same pitch as one or other of the notes to be compared. Such effects may be either facilitary or disruptive."

---

49 PRINCE, W. F., "Effects of guided listening on musical enjoyment of Junior High School students", Journal of Research in Music Education, vol.22, no.1, Spring 1974, p.74-51.

50 DOWLING, 1978, op cit.

51 ZENATTI, A., "Le développement génétique de la perception musicale" Monographics Françaises de Psychologie 17, 1-110, 1969, quoted in Dowling 1978, p.346.

52 DEUTSCH, D., "Music recognition", Psychological Review, vol.73, no.3, 1969, p.300-307.

The placing of a note the same as the original, in the second serial position between the note and the comparison note, improved the recognition of the pitch markedly. The position of the repeated note in the sequence was quite sensitive and did not have the same facilitating effect in any other position. Perhaps the repetition of the tonic note early in a melody might help the establishment of a sense of key. The notes used in her study were of equal duration and the spaces were also kept the same 200 milliseconds and 300 milliseconds respectively. Further work on the more memorable features of melodies could look at such sequences - in relation to memory for pitch, and for key.

Range of notes

Ortmann[53] reported in his 1926 study that the lowest and highest notes in a phrase gained more attention than the other notes, suggesting that this is one of the first features of music to be assimilated.

Position of Presentation and Alteration

Because the musical tasks in the SHRMT involve remembering a sequence of events in time, Primacy and Recency must be considered in the presentation of the items, that is to say in the order of the original and the choices in all sub-tests and in the alteration of notes within the choices in the shape and rhythm sub-tests. Thus the order of presentation of the original and of the choices within each item will be tested to see which positions (that is to say the first, second, third or fourth) were chosen more.

In constructing the test attention was paid to the research on Recency and Primacy as indicated below. Bentley reported on the work by Ortmann[53] who said that the

> "first and last notes of a melody 'are projected more vividly upon consciousness' than the intermediate notes; and R. Francés[54] found that the first and last notes were easier to remember than the intermediate notes, but he treats the first and last notes together as a group making no distinction between them.[55]

---

53 ORTMANN, O., "On the melodic relativity of tones", Psychological Monograph, 35, no.1, 1926, p.1-47.

54 FRANCÉS, R., "Récherches expérimentales sur la perception de la mélodie", Journal Psychology of Normal Pathology, 1954, p.47-51, p.439-457.

55 BENTLEY, 1966, op cit, p.113-114.

Bentley goes on to point out that in his tonal memory test the middle notes, i.e. the second, third and fourth were more difficult to remember than the first and last together, but the difference was small. The difference between the first and last notes was larger and in fact the first note in his test was twice as difficult to remember as the fifth. He suggests that the serial position of notes warrants further investigation and that the groupings used by Ortmann and Frances may give rise to misleading conclusions. The weighting given to different notes was somewhat confusing and the lengths of phrases was also limited in that they were of five notes only.

Experiments reported in Norman[56] and Loftus and Loftus[57] on short term memory, using verbal material, cannot be replicated using musical material but they do produce results which appear in part to conflict with the musical research outlined above namely that the early verbal items are remembered better than the later ones. One possible explanation is that they may receive more attention than the later ones. Another theory suggests that the transfer of material from the primary store to the secondary store is performed by an attention or rehearsal mechanism and this can handle only one item at a time and so a queue is formed favouring the earlier item(s). A further theory suggests that there is proactive interference in which memory traces from similar material learnt earlier becomes confused with the present material. In seeking to make sense of these apparent contradictions the difference in length and complexity between musical "notes" and verbal "items" should be taken into consideration. The results show that while the last note is the easiest to remember, the first item is remembered best. Both musical and verbal results point to the middle items being remembered less well. Consequently in the SHRMT it was considered that of the four possible positions of presentation of the "original" the first and fourth position would be most chosen. As far as the alterations occurring within the choices, it was considered that changes to the beginning and the end notes would be more noticeable than those occurring in the middle.

---

56 NORMAN, D. A., Memory and attention: an introduction to human information processing, 2nd ed. N.Y., John Wiley 1976, 262p.

57 LOFTUS, G. R. and LOFTUS, E. F., Human memory: the processing of information, Hillsdale, New Jersey, John Wiley 1976, 179p.

In the Shape sub-test alterations to the beginning, middle and end of the distractors in the items were carried out systematically. The background research suggests that within a single phrase the first and last notes are more noticeable. In this test the situation is more complex as in any item the distractors are presented in groups of three together with the original.

Length of items

The length of material presented is another aspect that affects memorability. Items in other music tests are varied in length. Bentley[58] reported that the longer items in his pilot test in general proved more difficult than the shorter. (The items ranged in length from 3 to 10 notes). The type of scanning strategy used by the pupils in the test would seem to have relevance in the question of the length of the items. If the scanning strategy is a horizontal one, the length would be very important, but if it is a vertical scanning, then the length would not be as important. The change in cerebral processing with material of more than seven elements mentioned by Deutsch and Roll[59] could have some bearing on the performance of longer items. Three categories of length were used in the SHRMT shape test, short, medium and long.

Construction of items (see Appendix C for music, p.128)

(i) Distractors

The items were specially written for the test so as to incorporate the features to be investigated. Once the "original" had been written the distractors (the "choices") were written fulfilling the design requirements. The construction of the distractors involved the deliberate alteration or distortion of the original. These alterations were made systematically in each sub-test. In this sub-test the rhythm was held constant. The type of alteration to the distractors was made after some preliminary testing which suggested that the shape or outline and the range of notes established by a tune were important aspects. The importance of the contour or shape and the note range was confirmed by the research cited above.

---

58 BENTLEY, 1966, op cit, p.47.

59 DEUTSCH, D. and ROLL, P. L., "Mechanisms in processing tonal sequences", Journal of Experimental Psychology, vol.2, 1976, p.23-29.

The alterations made to the original to produce the distractors were testing the conservation of the idea of shape or outline of the melody and its note range. It was considered that if the alteration had some shape or outline characteristics similar to the original or if the outside range (or envelope of sound) established initially was broken then this would lead to a rejection of the distractor.

(a) One distractor was constructed so that the changes involved some intervallic alterations which although producing some degree of distortion yet maintained the basic outline. These distractors are called the "Outline maintained" distractors.

(b) One distractor for each item was written so that its notes went outside the range of notes established by the original. This usually involved some quite wide interval distortion. These are called the "Outside the range" distractors.

(c) The third distractor in each item was changed so that the alterations occurred within the range of notes outlined and resulted in the melody turning in on itself. These are called the "Within the range" distractors.

(ii) Items were presented in such a way that some of the originals were in the first position of presentation, some in the second and so on. It was considered that if primacy and recency effects were operating then the responses to either first or last positions of presentation might be found to be significantly higher than the second or third position.

(iii) The items were written in three lengths, short, medium and long. In this sub-test it was expected that the short items would be the easiest, as for recognition to be correct the pupil needed to check through the item from beginning to end - a horizontal scanning strategy.

(iv) Tonal - Atonal

Both tonal and atonal items were used to see if the atonal ones were found to be more difficult. The atonal items had more jagged outlines associated with some contemporary music. Lundin[60] reported the work of Van Neuys and Weaver[61] who worked out an order of difficulty in relation to melody and rhythm. Melodies with irregular progressions

---

60 LUNDIN, R. W., An objective psychology of music, 2nd ed, N.Y., Ronald Press Co. 1967.

61 VAN NEUYS, K. and WEAVER, H. E., "Memory span and visual phrases in reading rhythms and melodies", Psychological monograms no.55, 1943, p.33-50.

and larger pitch intervals (a fifth or more) were listed as being the most difficult. (Melodies which could be described as having jagged outlines would also fall in to this category). Van Neuys and Weaver pointed out that the memory span decreases as the complexity increases. The Zenatti[62] research would suggest that 11 year olds should have little difficulty with the atonal pieces.

(v) Singable

Items were written in the treble and bass clefs. The treble clef items were within the vocal range of the majority of pupils and the bass clef items were outside the normal vocal range of 11 and 12 year olds. Bentley reports that it has been suggested that the larynx assists in a pitch discrimination task even when no conscious response is made by the subject. Vernon[63] wrote that undoubtedly the larynx or vocal cords are of great importance in the recognition of pitch change. If this is so then in a task where the shape of a piece is to be recognised this could be of use. A conversation with a Cathedral Choirmaster supported this aspect of enquiry.

The Research Hypotheses being tested in this Shape sub-test were as follows

(i) Distractor Alteration

Hypothesis

The order of selection of the distractors will be such that the distractor in which the alteration maintains the outline will be chosen most, followed by the distractor in which the alteration is within the given range of notes. The distractor in which the alteration moves outside the given range of notes will be chosen least.

(ii) Position of Alteration

Hypothesis

Alterations to the beginning or the end of the original will be more easily detected than alterations to the middle.

---

62 ZENATTI, 1969, op cit.

63 VERNON, P. E., "The apprehension and cognition of music", Proceedings of the Musicians' Association, 59, 1932-33, p.61-84, quoted by Bentley 1966, op cit, p.57.

(iii) Position of presentation

The first and fourth positions of presentation of the original will be more likely to be chosen than the second and third.

(iv) Length of item

A greater number of the short items will be chosen correctly than either the medium or long items.

(v) Tonality - Atonality

Atonal and tonal items will be chosen correctly equally well.

(vi) Singable Range

Items in the singable range (treble clef items) will be chosen more accurately than those that are outside the range, in this case lower (bass clef) items.

BACKGROUND TO THE SHRMT SUB-TEST CONSTRUCTION 2 - RHYTHM

While Rhythm, like melody is a basic element in music, there is some difference of opinion as to whether rhythmic skills are developed in children before or after those of melodic skills. Shuter[64] reviews writings on the topic quoting Révesz, Bentley and Stern who all favoured earlier rhythmic development. Bentley suggested that children "coalesce" with a dominant rhythmic pattern earlier than with a melodic pattern.

Wing[65] favoured the earlier development of melodic shape. Various studies have been carried out on different aspects of rhythmic involvement, for example Heinlein in 1929, (reported by Shuter)[64] had young children walking, or attempting to walk in time with the music, an activity they performed quite poorly. A similar study was carried out by Jersild and Bienstock in 1935 (also reported by Shuter)[64] with similar results. Pflederer[66] used young children (5-8) in her studies using Piaget's principle of conservation and concluded that conservation was easier to identify in the area of rhythm than in the area of melody.

---

64 SHUTER 1968, op cit, p.74-76.

65 WING, 1960, op cit.

66 PFLEDERER, M., "The responses of children to musical tasks embodying Piaget's principles of conservation", Journal of Research in Music Education, vol.12, no.4, 1964, p.251-268.

Thackray reported from his studies that development of rhythmic abilities is fairly continuous up to age 15, although it is probably not a steady development as it appears to be rapid about 11-12 years of age and less rapid at 13 plus.[67]

Definitions

The word "Rhythm" is notorious for its many different interpretations as in common usage it may be used to refer to aspects of pulse, metre or time. As Rupert Thackray[67] points out, when people speak of a sense of rhythm it is not certain what is meant, as there seem to be many rhythmic abilities.

Bairstow says,

> "Rhythm makes a deeper impression on the memory than any other element in music. Tunes with incisive, arresting figures can be recognised from the rhythm alone." [68]

Yet despite this, rhythm is defined variously by different people. Seashore[69] wrote that a sense of rhythm is the capacity for hearing and recalling rhythmic patterns with precision in time. Lundin writes, "Rhythm, in contrast to time, is the organisation of the time relationships."[70] Bentley[71] writes of rhythmic elements which depend on the constituent note-lengths of a piece. Sounds have a "meaningful relation" to each other primarily in terms of pitch intervals and note lengths, i.e. the tonal and rhythmic elements. The dominant "pull" of a rhythmic stimulus cannot occur until regular pulse has been established and perceived.

Farnsworth says that

> "rhythm is more than the periodicity resulting from the continuous repetition of a simple sequence . . . To elicit rhythm, one element in the sequence must be emphasised in some way to make it stand out from its fellows . . . Rhythms serve the listener by increasing his perceptual span, dividing up patterns of melodic material so that larger units can be more readily grasped." [72]

---

67 THACKRAY, R., "An investigation into rhythmic abilities", Music education papers number 4, London, Novello 1969.

68 BAIRSTOW, E. C., The evolution of musical form, London, Oxford University Press, 1943, p.36.

69 SEASHORE, C. E., The psychology of musical talent, N.Y., Silver Burdett, 1919.

70 LUNDIN, 1967, op cit, p.111.

71 BENTLEY, 1966, op cit, p.27-28.

72 FARNSWORTH, P. R., The social psychology of music, 2nd ed. Iowa, Iowa State University Press, 1969, p.61.

> "Rhythm is a system of temporal anticipations created by the listener in the belief that certain events will take place at certain specific future points in time . . . If the listener cannot anticipate in this way there is no rhythm." [70]

Because so many different elements are involved in the idea of rhythm, for example accent, time, period, pace and metre, it is not surprising that it is difficult to find agreement as to a precise definition. Music is a temporal art and all the descriptions suggested above have to do with that idea. Current comment on the word "rhythm" suggests that its etymology may in fact be different from that assumed earlier in the century. The New Grove Dictionary of Music and Musicians (1980) suggests that the basic meaning comes from the idea "to pull" rather than the idea of "flow" which was given in the 1954 edition of the Dictionary. There are so many aspects of rhythm that the vocabulary describing them and the interrelations between them can become confusing. For the purposes of this study, rhythm is understood to be the grouping of musical sounds by means of duration and stress.

Rhythm tests

Tests of rhythmic abilities have been included in many of the Music tests and have involved different tasks. Shuter points out that one of the difficulties of studying rhythm is the "motley collection of tests whose reliabilities are poor and whose relevance to music is, to say the least, dubious."[73] Mainwaring[74] had the stimulus presented by metronome or by pencil tapping or buzzer or rhythmic word groups and the subjects had to decide whether the metre was in two's, three's or four's. In the Drake Musical Aptitude Test[75], the subject had to continue counting a beat which was established by a metronome, for a given time. In the Wing test[76], the rhythm task involved the decision as to whether the second playing of the item was the same as the first and if it was different, was it a better version. The Gordon Musical Aptitude Profile[77] had a tempo section, in which the tempo of a piece and its answer were compared, and a metre section, in which the metre of its piece and its answer were compared. Bentley used short rhythmic phrases of four beats which were replayed, either the same, or altered. The subjects had to say on which beat the

---

73 SHUTER, 1968, op cit. p.190.

74 MAINWARING, J., "Tests of musical ability", British Journal of Educational Psychology, no.1, 1931, p.313-321.

75 DRAKE, 1957, op cit.

76 WING, 1960, op cit.

77 GORDON, E., Manual musical aptitude profile, Boston, Houghton Mifflin, 1965. 113 p.

alteration, if any, occurred.

The Thackray[78] tests of rhythmic aptitude involved seven activities of rhythmic perception and five activities of rhythmic performance. The variety of activities associated with rhythm tests points to its complexity.

The place of melody in rhythm tests

A question to be considered in the preparation of a rhythm test is whether or not the rhythm is to be associated with a tonal presentation. Bentley favoured the separate measurement of tonal and rhythmic elements. This decision was based on his experience with an earlier pilot test. Lundin[79] in describing the rhythmic sequence part of his test, asserts that his use of melodic material along with the rhythmic, is different from previous rhythm tests. Wing[80] who also used melodic material with the rhythmic said "musical rhythm can only truly be said to be present when it is associated with tones" [notes]. Thackray found that some children had real difficulty in isolating the rhythm from the melody. But he also found that a rhythm clothed in melody was easier to memorize and reproduce than a rhythm on its own. Petzold[81] found that the use of melodically presented rhythms was not significantly different from rhythm only ones. J. B. Davies[82] talked of the confounding effect of melody and rhythm, and wondered about the degree to which memory for melody facilitates memory for rhythm, and vice versa.

The use of melodic material in a rhythmic task raises the question, is the material perceived as a melody undergoing a change in rate of presentation or is it thought of as a rhythm only task? Thackray[83] commenting on Test 6 (Comparison of Rhythms) in his test battery writes that

> "it seemed possible that the introduction of the melodic element might work either way, either as an aid to rhythmic memory and discrimination or as a hindrance."

---

78 THACKRAY, R. M., An investigation into rhythmic abilities, London, Novello, 1969.

79 LUNDIN, R. W., "The development and validation of a set of musical ability tests". Psychological Monogram 63: 305, 1949. p.1-20.

80 WING, H. D., "Tests of musical ability and appreciation", British Journal of Psychology, monogram supplement no.27, p.88.

81 PETZOLD, R. G., Auditory perception of musical sounds by children in the first six grades, Co-operative research project no.1051, University of Wisconsin 1966 - quoted by Thackray 1972.

82 DAVIES, 1971, op cit.

83 THACKRAY, R. M., Rhythmic abilities in children, London, Novello, 1972, p.13.

Recent research on melodic material by Jones, Maser and Kidd[84] used two rates of presentation of auditory patterns and while this is not a comparable study, the point is made that

> "a person encountering events patterned over time, generates simple expectancies about 'where' in space and 'when' in time forthcoming events should occur . . . Failure to anticipate future relations can occur either because patterns are based upon complicated schemes or because patterns occur too fast."

Construction of items (See Appendix C for music p. 202)

As rhythm in music exists most commonly in close association with different pitches the items for the SHRMT were given with a melody. At times the rhythm was given in a setting involving more than one part. This was tried because the recognition task involving rhythm in an "ordinary" piece of music (as opposed to artificially contrived music found in test items such as in SHRMT) may involve a presentation using chords rather than a single line. It was considered that the often "catchy" nature of compound time pieces might make them more memorable than pieces in simple time. The shape or outline of the notes in each item remained the same while the rhythm was altered.

The task called for a horizontal scanning strategy, which required a scan of the whole piece each time to check for a match with the original. It was considered likely that the longer pieces would be found to be more difficult. The items were short, medium or long as in the Shape sub-test. Like that sub-test the distractors were systematically altered. However, the alterations were restricted to those occurring in the beginning, middle or end of the piece. The time span of the shorter pieces did not allow for a more elaborate scheme as had been used in the Shape sub-test. In a test where all of the items were longer, a controlled use of a system such as triplet figures or dotted rhythms would be possible. Any consistent pattern of failure to notice alterations, in any part of the original, would suggest that subjects were attending less to a particular part of the piece, i.e. the beginning, middle or end.

---

84 JONES, M., MASER and KIDD, 1978, op cit.

The Research Hypotheses

The Research Hypotheses being tested in the Rhythm sub-test are as follows -

(i) Position of presentation

(a) The first and fourth positions of presentation of the original will be more likely to be chosen than the second and third.

(b) The second and third positions of presentation of the distractors will be more likely to be chosen than the first and fourth.

(ii) Positions of alteration

Alterations to the beginning or the end of the original will be more easily detected than alterations to the middle.

(iii) Length of items

A greater number of the short items will be chosen correctly than either the medium or long items.

(iv) Single line and multiple line presentation

Items consisting of a single line of music and those of multiple lines will be chosen correctly equally well.

(v) Simple and compound time

More items in compound time will be chosen correctly than items in simple time.

BACKGROUND TO THE SHRMT SUB-TEST CONSTRUCTION 3 - TEXTURE

The word "Texture" embraces a number of ideas and this is reflected in the difficulty in finding an adequate definition.[85] One definition would be that texture arises as the result of a number of lines working together, and refers to the action of the component parts or voices. Polyphony and homophony and mixtures of these are the usual kinds of texture considered. Another definition considers that texture refers to any of the vertical aspects of a piece of music with regard to the way in which individual parts or voices are put together. Occasionally the term refers to non-vertical aspects, for example, changes of density and rate of harmonic change. In this study Texture is used to include all the changes occurring in the parts accompanying the melody, including the ideas of thickness or thinness, (which is governed by the number of parts

85 The New Grove Dictionary points out that there is no exact equivalent word for Texture in any other language, Stanley Sadie Ed., London, Macmillan, 1980, vol.18, p.709.

accompanying the melody) and also the idea of harmonic change. Within each item the melody is held constant.

Research findings

Hair[86] found that first Grade children could determine harmonic change when two different chords were played. Bridges[87] who worked with children aged from 5-9 years found that there was a gradual development in harmonic discrimination up to the age of 9. Harmonic discrimination was performed better when the music used was unfamiliar to the subjects. Age is an important factor in harmonic discrimination and this skill appears to be the last of the perception skills to develop, possibly because of the perceptual centration phenomenon.

Bentley[88] reported, in his account of the construction of his own tests that it was not known how many simultaneously played notes could be distinguished by children. Wing (quoted in Shuter)[89], found that children between 8 and 11 could detect whether a chord had two or three notes. He also found that they could detect if the treble moved up or down. Wing's cadence and discord tests, included in earlier experiments, showed that subjects seem to develop some sensitivity to the effects of harmony before the age of 11.

R. M. Thackray[90], reporting observations of teachers involved in the Research projects (1974) noted that many of the children, aged 7-11 who scored highly on Tests of Harmonic Perception, were players of harmony instruments (notably the piano and guitar). It appeared that children who had not been introduced to some harmonic elements in their school music lessons, scored lowest. Positive evidence that many children develop a considerable degree of harmonic awareness well before the age of nine, was produced in the pilot experiments. Rasmussen[91] reported that

---

86 HAIR, H. I., "The effect of training on the harmonic discrimination of first grade children", Journal of Research in Music Education vol.21, no.1, 1973, p.85-90.

87 BRIDGES, V. A., An exploratory study of the harmonic discrimination ability of children in kindergarten through grade three in two selected schools, Doctoral Dissertation, quoted in Zimmerman, Research in music education with very young children - Paper for Seminar Canada 1978.

88 BENTLEY, 1966, op cit.

89 SHUTER, 1968, op cit.

90 THACKRAY, R. M., Some research projects in music education: interim report, Schools Council Publications, Reading University 1974.

91 RASMUSSEN, W. I., Listening skills through programmed instruction unpublished Thesis, University of Southern California, 1966.

in his programmed lessons, pupils found identification of polyphonic texture to be harder than the identification of homophonic texture.

Other tests

Some of the elements involved in this sub-test have been used as the basis of separate sections in existing test batteries. Both the Wing[27] and Bentley[20] tests had sections which called for the identification of the number of notes being played in a chord. This aspect, involving the number of parts, is being tested in the texture sub-test.

The harmony section of the Gordon Musical Aptitude Profile test[92] involved a two part piece in which the melody remained the same while the lower part was either the same as, or different from, the initial playing.

The Oregon Music Discrimination Test[8] in its initial form, had the playing of the original along with three versions which were distorted rhythmically, melodically or harmonically. In the subsequent simpler version the subjects were asked to choose between a distractor and an original and were asked to identify which of the elements in the distractor had been altered. The SHRMT is similar to the original version of the Oregon test in that there are four choices, one of which is the original and the pupils are asked to identify the original from amongst the distractors. Hevner altered her test because the use of four choices produced items that were too long.

Construction of the items (See Appendix C for Music, p.208)

Despite the number of features that contribute to the idea of "texture", the task set in the SHRMT sub-test was a straight recognition task, i.e. which of the four choices offered is the same as the original? The pupils did not have to verbalise or consciously recognise the alteration mechanisms. The types of changes in the distractors required

(i) a vertical scan to check for the number of parts and any harmonic changes,

(ii) a horizontal scan to check the alteration to the type of movement.

The length of the piece would not matter for the vertical scan but would be important in the horizontal scan. The short items are likely to be easier, although there may be some confusion over the need to adopt two scanning strategies. As with the other sub-tests, there were three lengths of item; short, medium and long.

---

92 GORDON, E., Musical Aptitude Profile Manual, Boston, Houghton-Mifflin, 1968.

Alterations to the beginning, middle or end of the items were not appropriate in this sub-test because the type of accompaniment used in any particular choice is constant throughout that choice. For each item the alterations were similar.

(i) In one distractor the number of accompanying parts was altered - either being increased or reduced. This is linked with the skill tested in the Bentley chord test, although in the SHRMT the pupils were not asked to specify the precise nature of the alteration.

(ii) In another distractor the change was to the bass line, either involving a change of chord or else a change in the direction of the bass line, for example from a falling bass to a rising one but without a change of chord. The length of the items at times placed restraints as far as harmonic change was concerned.

(iii) The third distractor had a change to the type of movement in the accompaniment either by reducing or adding passing notes or altering the line of movement. This change could be interpreted as a change from a polyphonic to a homophonic setting or vice versa. The pupils were not asked to identify which of these categories the music belonged to. While textbooks suggest a clear distinction between these two types of texture, the author's experience in the classroom has been that pupils often encounter difficulty in making this distinction.

All the types of alterations used in the choices are features which could usefully be identified in describing the happenings or character of a piece of music.

The top line of a piece is usually the most noticeable and is therefore most easily followed. Inexperienced listeners are less likely to be able to follow the lower parts and so it was expected that the distractor with the bass alteration was most likely to be confused with the original. The same effect may apply to alterations to the inner parts because they also are below the melody. In some instances, however, the type of change will be so noticeable as to make decision making easy. The research findings would suggest that pupils of the 11-12 age group should be able to notice harmonic changes.

The Research Hypotheses

The research hypotheses being tested in the Texture sub-test are as follows.

(i) Distractor alteration

Hypothesis

The order of selection of the distractors will be such that the distractor in which the bass part is altered will be chosen most, followed by the distractor in which the direction of the accompaniment, with respect to the melody, is changed. The distractor in which the number of accompanying parts is altered will be chosen least.

(ii) Position of presentation

(a) The first and fourth position of presentation of the original will be more likely to be chosen than the second and third.

(b) The second and third positions of presentation of the distractors will be more likely to be chosen than the first and the fourth.

(iii) Length of items

A greater number of the short items will be chosen correctly than either the medium or long items.

(iv) Number of parts in the initial presentation

The items initially presented in two parts will be chosen correctly more often than items presented in more than two parts.

BACKGROUND TO THE SHRMT SUB-TEST CONSTRUCTION 4 - TIMBRE

The final sub-test involved the recognition of particular groups of instruments. In any recognition task involving music, different people relate better to different aspects, because of their experiences, and therefore it was considered that recognition of a piece of music could well be on the grounds of its timbre. The instruments from the string family used in this sub-test were two violins, a viola and a cello, and from the woodwind family, a flute, oboe, clarinet and bassoon. Brass instruments were avoided as the balance would be difficult to control under the recording conditions.

Definition

The commonly accepted definition of timbre as tone-colour, or quality of tone, is the meaning in which it is used in the sub-test.

Other tests

As most of the widely described tests in music are those involving music ability, aptitude, achievement, musicality, or musical intelligence, it is not surprising to find only one sub-test involving the recognition of different sounds. Seashore[30] added a timbre test to his battery in 1939. In this test, consisting of 50 pairs of notes, the subject was asked to judge if each pair of sounds had the same tone quality.

Research findings

Little work has been carried out concerning the development of children in response to timbre. Shuter reported that as well as being interested in the activity that produces sound, some young children appear to have a genuine interest in the sounds they make. Moorhead and Pond[93] reported on the Pillsbury Foundation School and said that when the child "begins to use instruments for specific (e.g. dramatic) purposes, he chooses the instrument whose timbre he considers most suitable." Another researcher, Belaiew-Exemplarsy[94] found that with the 6½-7½ year old children he studied, their greatest joy in music was the timbre or tone colour.

G. Simons[95] reported from his survey of research on early child development, that pre-school and primary school children could be taught aural discrimination of orchestral instruments. S. W. Schultz found in his study of children's ability to respond to elements of music, that there was no significant difference between boys' and girls' ability to respond to instrumental timbre.

---

93 MOORHEAD, G. E. and POND, D., The music of young children, I and II Pillsbury Foundation Studies 1941, 1942, quoted by Shuter p.64.

94 BELAIEW-EXEMPLARSY, S., "Das musikalische Empfinden im Verschulatter", Zsch f. Ang. Psychol. 27, p.177-216, 1926, quoted by Shuter p.64.

95 SIMONS, G. M., Early childhood musical development: a synthesis of research findings 1960-1975, Paper presented to the International Society for Music Education Conference, Canada 1978.

Construction of items (See Appendix C for music p.216.)

As in the other sub-tests the task presented to the pupils was simply that of deciding which of the four choices was the same as the original. The music in each item was held constant and the instrumentation for each distractor was altered. Since the decision making could occur within any part of the piece it was considered that the longer items would in fact be easier. Items were short, medium or long. The scanning strategy appropriate in this sub-test was a vertical scan to check whether the sound sources were the same. Alterations to the beginning, middle or end of the items were not suitable in this sub-test.

The types of alteration to the distractors were systematic and three changes were made in each item.

(i) One distractor involved the playing of a family of instruments, either string or woodwind. It was considered that such a sound would have a family blend which would be likely to be more easily distinguished, even if the subjects were inexperienced with the sounds of the particular instruments.

(ii) Another distractor had the middle instruments altered and it was considered that such alterations would be the least easy to detect, as the ability to hear internal parts reflects mature listening skills.

(iii) The third change involved the alteration of the bass instrument. This alteration would be likely to be difficult as pupils of that age would be unskilled in listening to bass lines, but it was considered that it would be more noticeable than the middle alteration.

The Research Hypotheses

The research hypotheses being tested in the Timbre sub-test are as follows,

(i) Distractor alteration

Hypothesis

The order of selection of the distractors will be such that the distractor with the alteration to the middle instrument(s) will be chosen most, followed by the distractor with the alteration to the bass instrument. The distractor in which the instrumentation is altered to a family (or another family) group of instruments will be chosen least.

(ii) Position of presentation

(a) The first and fourth positions of presentation of the original will be more likely to be chosen than the second and third.

(b) The second and third positions of presentation of the distractors will be more likely to be chosen than the first and fourth.

(iii) Length of items

A greater number of the long items will be chosen correctly than either the short or medium items.

(iv) Recognition of items presented by families of instruments

The items presented by a family of instruments will be chosen correctly more often than items presented by a mixed group of instruments.

RESEARCH BACKGROUND TWO

THE MUSICAL BACKGROUND QUESTIONNAIRE

Introduction

Every person approaching a listening task comes from a background which has been inculcating attitudes, providing experiences, encouraging or discouraging the acquisition of musical skills and ignoring or directing attention to music. Because all these play some part in the listening process, it is appropriate to investigate the body of knowledge we have of them in order to increase our understanding and also to suggest ways of improving teaching methods so that the goal of the best aesthetic response is pursued.

ATTITUDES

In the listening model proposed earlier (p. 7) it was suggested that attitudes could help or hinder the attainment of aesthetic enjoyment from music. As the proverb remarks "one can lead a horse to water, twenty cannot make it drink." Similarly you can expose people to music but you cannot force them to enjoy it or even listen to it.

Both negative and positive attitudes make a significant difference when unfamiliar or unacceptable music is presented, for example music which the listener regards as "too old", "way out" or "avant-garde". Negative attitudes result in the listener making little or no effort to find any "treasure". Positive attitudes on the other hand, allow the listener to use such listening skills and knowledge as they possess in order to discover the relationships between the sounds. A music educational writer J. B. Brocklehurst reminds readers that

> "The establishment of constructive attitudes towards music determines the quality and efficiency of musical learning and is vital if the foundations are to be laid of a taste for, as well as a taste in music." [1]

---

1 BROCKLEHURST, J. B., Response to music: principles of music education London, Routledge and Kegan Paul, 1971, p.57.

The effect of negative attitudes is clearly seen in the school situation, especially in core music classes in the antagonistic attitudes of some pupils towards any pre-rock or contemporary non-entertainment music. These attitudes both hinder the acquisition of the subject content and also prevent the pupil from experiencing the desired aesthetic pleasure. A contributing factor to these antagonistic attitudes is the extreme commercialism of some radio stations whose programmes devote the highest percentage of music time to the latest records provided by record companies and to those "pop groups" which are promoted by these companies.

A similar situation to that found in core music classes often exists amongst "classical" concert goers. In their case the antagonism is usually towards contemporary serious music, i.e. "serious" as opposed to "light entertainment" music. Once again commercial considerations dictate to such an extent that few, if any steps are taken to present an adequately balanced, historically inclusive programme. What is provided is what the average concert goer is prepared to pay to hear. As one New Zealand composer said, "There's nothing the authorities can do about it. It's all very well for composers like me to scream and yell and shout and say, 'Well, we want contemporary music!' And they say, 'Well, we are not going to hire the N.Z.B.C. Symphony Orchestra to play contemporary music so you can go along and listen to it, with about four other people!' " [2]

The acquisition of attitudes

Harry C. Triandis puts together many of the central ideas used by attitude theorists when he says,

> "An attitude is an idea charged with emotion which predisposes a class of actions to a particular class of social situations. This definition suggests that attitudes have three components:
>
> (a) A cognitive component, that is, the *idea* which is generally some category used by humans in thinking...
>
> (b) An *affective* component, that is, the emotion which charges the idea. If a person 'feels good' or 'feels bad' when he thinks about the category we would say he has a positive or negative affect towards the member of this category...
>
> (c) A behavioural component, that is, a *predisposition to action.*" [3]

---

2 COUSINS, J. in conversation with the author.

3 TRIANDIS, H. C. Attitude and attitude change, N.Y., J. Wiley, 1971, p.2-3.

Attitudes have several kinds of functions - they help people to adjust, to defend their egos, to express their values and to understand the world around them. The experiences of people determine their attitudes. As attitudes develop, cognitions become more differentiated, integrated and organized, and affect and behavioural intentions become associated with these conditions. Attitude is not a necessary or sufficient cause of behaviour, but it is a contributing cause. Behaviour often changes attitudes, as people develop attitudes that justify their previous behaviour. Behaviour is the result not only of attitudes but also of norms, habits and expectations about reinforcement.

Concerning the acquisition of attitudes we are told,

> "Attitudes are learned...We form and develop attitudes in order to understand the world around us, to protect our self esteem, to adjust in a complex world and to express our fundamental values... We need to know how to behave correctly in relation to the various objects found in the environment... G. W. Allport suggests that the majority of attitudes held by a person are acquired from talking with family and friends. Although these attitudes are not particularly intense, other people are, nevertheless, the sources of information for so many of our attitudes that this is an extremely important aspect of attitude formation... We belong to other groups and the attitudes of members of the other groups we belong to, or would like to belong to, become guides for the development of our own attitudes... We also learn attitudes through direct experience, but only a small proportion develop from direct experience. . . [4]
>
> "Direct experience is most relevant to the development of the cognitive and affective components, other people (family and friends) are most relevant to the behavioural component." [5]

Of course direct experience can have some implications for the behavioural component because the three components interact and there is the tendency for them to become as consistent as possible. Before discussing the relevance of this for the music teacher, it will be useful to comment on the relationship between attitude and behaviour.

---

4 TRIANDIS, 1971, op cit, p.101-102.

5 TRIANDIS, 1971, op cit, p.119.

This relationship is one of the most widely debated problems concerning attitudes at present. Since the pioneering work of LaPiere social scientists have been debating the efficacy of attitude as a predictor. LaPiere concluded, as the result of his study that the relationship between attitudes and action could be quite weak.[6]

Albrecht and Carpenter[7] report that Deutscher[8] has gone so far as to argue that there is no theoretical reason to expect congruence between words and deeds and that in fact there is every reason to expect discrepancies. Wicker[9] after a careful review of the research concluded that, at best, attitude accounts for 10% of variability in predicting behaviour. Writers since then have realised that behaviour in any given instance is likely to be due to multiple determinants, including attitudes.

Ajzean and Fisbein[10] found that people's actions are systematically related to their attitudes when the nature of the attitudinal predictors and the behaviour criteria are taken into consideration. They consider that Attitudinal and Behavioural entities have four elements - that of action, target, context and time. When the target and action elements of the attitudinal and behavioural entities corresponded, then the correlation between attitude and behaviour was found to be quite high and significant. Ajzean and Fishbein consider the LaPiere study to be inadequate in its conclusions, as it used entities which corresponded only in part. They say that if behaviour is to be predicted from attitude, then there must be a high correspondence between the target and action elements of the measure employed.

---

6 The LaPiere study involved a Chinese couple who were taken on a tour of the States. In the face to face situation they encountered no problems in obtaining accommodation but when LaPiere subsequently wrote to these same places on their behalf he found that many of the places were not prepared to accommodate Chinese people. The implication taken from this is that the relationship between attitude and behaviour is weak in so far that although in the face-to-face situation accommodation was granted, the accommodation was not granted in the theoretical situation, i.e. when communication was by letter.

7 ALBRECHT, S. L. and CARPENTER, K. E., "Attitudes as predictions of behaviour versus behaviour intentions: a convergence of research traditions." Sociometry, vol.39, no.1, 1976, p.1-10.

8 DEUTSCHER, I. "Words and deeds: science and social policy", Social Problems, 13:235-254, 1966.

DEUTSCHER. I. What we say/what we do, Glenview, Illinois, Scott Foresman, 1973.

9 WICKER, A.W., "Attitude versus actions: the relationship of verbal and overt behavioural responses to attitude objects", Readings: Attitudes and behaviour, Ed. K. Thomas, Penguin, 1971.

10 AJZEAN, I. and FISHBEIN, M., "Attitude - behaviour relations: a theoretical analysis and review of empirical research", Psychological bulletin, vol.84, no.5, 1977, p.888-918.

Triandis says,

> "Behaviour is a function of (a) attitudes, (b) norms, (c) habits and (d) expectancies about reinforcement".

Social norms are what people think they should do, as opposed to what people would like to do; habits are what people usually have done.

> "When all these four factors (attitudes, norms, habits and expectancies about reinforcement) are consistent then there is consistency between attitudes and behaviour".[11]

A study on students' smoking designed by J. Sugar[12] found that the strongest single predictor of behaviour was habit, followed by norm and the least important was attitude. "Attitudes alone do not predict behaviour; attitudes together with norms and habits do".[11] When there is no conflict between attitudes and norms, attitudes are reasonably good predictors of behaviour.

Attitude Change

Behaviour is thus related to attitudes to a greater or lesser degree. Of particular concern to this study is the possibility of changing attitudes so that the gap between contemporary composers and contemporary listeners may be bridged. As well, an attitude change that widened the listening repertoire to include a wide range of previously unfamiliar music would be enriching and informative. The pressing question is, can both ordinary concert attenders and teenage pop-dominated pupils be helped to have an attitude change?

The theorists say that attitude change does occur, although they warn that this is a complex area.

> "Attitudes can be changed in a variety of ways. A person may receive new information . . . that could produce changes in the cognitive component of his attitude".

The affective component could be changed by pleasant or unpleasant experiences in the presence of the attitude object and the behavioural component by, for example, legal imposition of behavioural changes. Attitudes can also be changed by forcing a person to act or by presenting a "fait accompli". When one of the components has changed, the others also are likely to change.

---

11 TRIANDIS, 1971, op cit, p.16.

12 SUGAR, J., An analysis of the relationship of attitudes and behaviour NSF Undergraduate Research participation, Final report, University of Illinois, 1967.

Attitudes change through direct and indirect experiences. Direct experiences with the attitude object usually change all of the components of attitude while indirect experiences (for example reading or hearing), typically change the cognitive or behavioural components, since they are usually informational or normative.[13]

This possibility of change by direct experience offers hope especially to the music educator. Good, well planned direct encounters with music should help to bring about an attitude change. Some suggestions for direct encounters with music are contained in the interviews with New Zealand composers. (see Appendix G).

Indirect methods change any, or all of the following - the cognitive component, for example by supplying new information; the affective component, by producing pleasant or unpleasant experiences in the presence of the attitude objects; the behavioural component, by changing norms or by the enforced imposition of behavioural changes. When any one of the components is changed, the others also are likely to change.

If a communication is to have an observable effect on attitude change, the receiver of the communication must go through certain stages of indirect change of attitude. These steps are described as attention, comprehension, yielding, retention and action.[14] New information presented about some aspect of music may not be attended to. If it is attended to, it may not be understood and those who understand may not agree that it is a good idea. Those who do agree may not remember long enough to do anything about it. Finally of those who do remember it, even fewer will take the step of actually doing something. A number of variables determine whether a person will move from one step to the next: attention may be reduced because of distraction, comprehension may be reduced because of low intelligence, yielding reduced because of previous knowledge, retention because of the interference of other messages action may not occur because external circumstances prevent the projected course of action being implemented. Thus it can be seen that there are many uncertainties involved in the Indirect Method.

---

13 TRIANDIS, 1971, op cit, p.142-167.

14 McGUIRE, W. J., "Personality and attitude change: an information processing theory", Psychological foundations of attitudes, ed. Greenwald, A. G., Brook, T. C. and Ostram T. M., N.Y., Academic Press, 1968, p.171-196, quoted in Triandis 1971 op cit, p.144.

The attitudes of the listener are probably the single most important group of factors in the gaining of that person's attention. It appears that people prefer to receive information which supports their existing attitudes and avoid non-supportive information. J. T. Klapper states

> "twenty odd years of mass communication research have identified some tendencies that are basic and even axiomatic. Perhaps most basic and widely confirmed is the finding that mass communication ordinarily serves as an agent of reinforcement of such attitudes, opinions and behavioural tendencies as the individual audience members already possess."[15]

After attention comes comprehension. Obviously the message

> "that fits into the audience's frame of reference, that is clear, cogent, easy to understand and does not make the audience defensive is most likely to be comprehended."[16]

If the material is difficult the asking of questions and face to face encounters are most likely to maximize comprehension. An audience that is defensive has its comprehension inhibited.

In discussing yielding it is helpful to adopt a distinction between compliance, identification and internalization. Compliance occurs when an individual accepts an influence because he or she hopes to achieve a favourable reaction from another person or group. This induced behaviour is adopted not because the person believes in its content but because he or she expects to gain specific rewards or avoid specific punishments. Identification occurs when an individual accepts influence because of a desire to establish or maintain a satisfactory relationship with another person or with a group. This act of conforming is a means of obtaining satisfaction. Internalization occurs when an individual accepts influence because the content of the induced behaviour is intrinsically rewarding. Triandis says

> "Three basic influences cause an audience to yield to a message: (a) the perceived power of the source, that is, the perceived reward - punishment effects of yielding, (b) the attractiveness of the source, and (c) the extent to which the influence fits with the existing values and cognitions of the audience.

---

15 KLAPPER, J. T., "Mass communication, attitude, stability and change", Attitude, ego involvement and change, ed. Sherif, C. W. and Sherif, M., N.Y., Wiley, 1967, p.297-310, quoted in Triandis 1971, op cit, p.153.

16 TRIANDIS, H. D., 1971, op cit, p.159.

> It follows from these distinctions that three characteristics of the source of a message will maximise different kinds of dependent variables. Specifically the power of the source would be most likely to lead to compliance; its attractiveness would be most likely to lead to identification and its credibility would be most likely to lead to internalization." [17]

Messages that make it clear that there will be positive reinforcements if a given position is adopted are more likely to lead to compliance. After the message has been understood and yielded to, the issue is how long will the effect last, in other words the question of retention. If the message comes from powerful and attractive sources and is repeated, then it is likely to be retained. Memory is important for this. If people rate highly on the aspects of memory that match the message, then more of the message will be retained. So we can say that an accurate memory is an important factor in attitude change.[18]

There are few field studies of action apart from responses to questionnaires or surveys because it is virtually impossible to obtain a controlled measurement of action in everyday life situations. So the problem remains as to the exact relationship between verbal behaviour and other behaviour. However with Triandis we can say,

> "It is more costly for the organism to emit actions than to feel good or bad about an attitude object... We may feel positive about an issue but not positive enough to act. Conversely, we may feel very negative about an issue, but acting in opposition may be too costly." [19]

A music educationalist reporting on research into attitudes and music says

> "Results of research conducted into attitudes towards music and into the relationship between taste and socio-economic status confirm that attitudes and tastes are not absolute, but are culturally and environmentally determined." [20]

---

17 ibid, p.159-160.

18 ibid, p.162-163.

19 ibid, p.67.

20 BROCKLEHURST, 1971, op cit, p.60-61.

Attitude Measurement

The actual measurement of attitudes towards music is outside the scope of this study. However the literature reveals that physiological measurements reflect attitudes.

The attitude of a person has an effect that can be measured in terms of autonomic response (i.e. blood pressure, pulse rate, respiration phychogalvanic reflex and so on). G. Harrer and H. Harrer write that their extensive and detailed investigations have led them to the conclusion that

> "the autonomic response [to music] depends on (a) its reactivity, that is the lability or stability of the autonomic regulatory processes, (b) the emotional reactivity and (c) attitudes toward music, the importance of music in the subject's life and also upon his immediate attitude towards the piece of music presented in the test situation, and also (d) the kind of music which is presented. The nature of a subject's perception of music depends upon his prevailing attitude, indifferent or emotional, towards the music, his manner of listening and on his current mood inter alia".[21]

It will be apparent from the preceding discussion that attitudes, their formation and the possibility of change are of crucial importance in the theory and practice of music education.

ATTENTION AND MEMORY

The listening model (p. 7) lists Attention and Information processing or Memory as other important helps or hindrances to listening. The pupils themselves recognised the importance of attention and memory in the listening task set in the test. Many listeners are aware that the quality of their listening is affected by their attention and memory.

After the administration of the SHRMT, discussions were held with the pupils about the difficulties they felt they had faced in the tasks set. The words "attention" and "memory" featured frequently. They reported that they felt that their attention had not remained at the same level all the time, being better at the beginning and towards the end of the test. Longer items were reported to be more difficult because they were harder to remember. While it is not possible to check in any scientific way on the effect that these problems had on the pupils' test results, it highlights the fact that attention and memory are important aspects of the music listening experience.

---

21 HARRER, G. and HARRER, H., "Music, emotion and autonomic function", Music and the brain, Eds Critchley and Henson, London, W. Heinemann, p.202.

> "Music is essentially an aural art, existing only in time; listening being an active perceptual experience, is an art which demands sustained and concentrated attention and has to be acquired in the same way as creative and executive skills." [22]

What do we know concerning attention and memory, how do they function and how can we facilitate their use?

Attention

Interest in Attention and Memory is not new as is seen by this quotation from the written rules of memory in 400 B.C.[23]

> "This is the first thing, if you pay attention the judgement will better perceive the things going through it."

Nineteenth and twentieth-century investigations into the psychological process of attention have led to the important models and theories suggested by Broadbent[24], Trieseman[25], Deutsch and Deutsch[26], and Moray.[27] Norman says,

> "These theories, all have served a valuable purpose in guiding us to a good understanding of some phenomena, but if we go back and look at what is really meant by attention, we see that we have only scratched the surface." [28]

Although we commonly talk of paying attention to the task at hand and may attempt separate definitions, when it comes to a consideration of the mechanism of the apparently independent act, it becomes clear that attention is only part of the information processing system that occurs in the brain and thus should not be treated in isolation. Norman says

---

22 BROCKLEHURST, J. B., 1971, op cit, p.124-125.

23 NORMAN, D. A. Memory and attention: an introduction to human processing, 2nd ed. N.Y., John Wiley, 1976, p.1.

24 BROADBENT, D. E., Perception and communication, London, Pergamon Press, 1958.

25 TRIESEMAN, A. M., "Verbal cues, language and meaning in selective attention", American Journal of Psychology 77, 1964, p.215-216.

26 DEUTSCH, J. A. and DEUTSCH, D., "Attention: some theoretical considerations", Psychological review, 70, 1963, p.80-90.

27 MORAY, N., "Attention in dichotic listening: affective cues and the influence of instructions", Quarterly Journal of Experimental Psychology, 1959, p.56-60.

MORAY, N., Attention: selective processes in vision and hearing, N.Y., Academic Press, 1970.

28 NORMAN, 1976, op cit, p.36

> "The study of attention indicates that it cannot be divorced from the study of other cognitive phenomena." [29]

Attention, perception, pattern recognition and memory are all part of the information processing that goes on in the brain and should be treated together as parts of a whole. The interactions of sensory inputs with pattern recognition and memory are essential parts of human information processing, for in order to interpret adequately the incoming signals, information about the past is required and this is provided by the memory.

> "It is clear that one's knowledge greatly influences the processing of information, just as it is clear that the incoming information must ultimately influence one's knowledge." [30]

Because music is a succession of events in time which cannot normally be reviewed at will, the amount of the raw sound that impinges on the ear which is able to be processed is small. It is certain that more is heard than can be remembered. When, in the case of music listening, a collection of sounds which are made up of a succession of notes and combinations of notes impinge on the ear they are perceived, analysed and coded by the nervous system. Microscopic sounds whose vibrations are between .05 and .00007 per second are detected and coded in the inner ear and these mainly lead to the primary tone sensations of pitch, loudness and timbre. The intermediate sounds which are about .1 second affect mainly the processing mechanisms in the neural pathway from the ear to the auditory area in the brain and these produce added cues for quality perception, pitch identification and discrimination. The macroscopic sounds involving musical tone durations, successions and rhythms with vibrations beyond .1 second are processed at the highest neural level in the cerebral cortex and determine the actual musical message and its attributes. J. Beament says

> "Indeed it is almost true to say that musicality is having an ability to assess frequency, relative to other successive or simultaneous frequencies." [31]

---

29 NORMAN, 1976, op cit. p.37.

30 NORMAN, 1976, op cit, p.37.

31 BEAMENT, J., "The biology of music", Psychology of music, vol.5, no.1, 1977, p.11.

The attention mechanism cannot select intelligently among the alternative channels of information unless a basic identification of the nature of the information is made. Various analyzing mechanisms proceeding at the same time are applied to the information presented. Pattern recognition is one such mechanism using a feature-detection analysis (or a template matching or other schema depending on the psychological theory). In a music task this would lead for example to the recognition of a particular instrument or voices in a piece such as a concerto or an aria. Two steps are involved in the process, firstly the raw information is recoded and secondly it is supplemented by information already stored in the long term store, in this case about particular solo instruments or voices. Ideally the result would be the correct identification of the instrument or voice in question. Thus for quick and accurate pattern recognition, the long term store of the memory needs to be well stocked with relevant information. This means that any music programme should, as one of its functions, aim to fill the store with material useful for a wide variety of music situations.

The environment or context in which the sensory signals are presented affects the interpretation of them. At times there may be quite ambiguous perceptions. Norman quotes a demonstration of this suggested by a British Psychologist, John Morton. A recorded song which had relatively unintelligible words (he suggested that rock music was ideal!) was played to an audience. When the words were projected on the screen the audience was able to "hear" them quite distinctly demonstrating that the context of the presentation is important in the interpretation of the sensory signals.[32]

The classifying systems that are applied to the sensory information are divided into two main types depending on how the operations are guided. Any sequence that proceeds from the incoming data and works up through increasingly sophisticated analysis is called a data-driven, or bottom up analysis. In music this would begin with the sensory input and the physiological stages that recognise certain separate aspects, for example pitch, timbre, loudness and so on. Then special mechanisms recognise particular combinations of the features leading to a specific classification of a piece, for example as being from the Baroque era.

---

32 NORMAN, 1976, op cit, p.42

The other main sequence of operations is called the conceptually driven or top-down system which is guided by conceptualizations of the incoming information. The expectation of the sound would be refined by the analysis of the context, to yield expectations of particular sounds in particular orders, for example as being from the Baroque era.

Different sources of knowledge converge to aid the process of acquiring information. The system does not seem to be a simple sequence of stages but rather a set of interacting mechanisms all working together to produce the final result.

The limit on attentional capacity appears to be a general limit on resources, rather than a blockage at any particular stage in the processing. However, the paying of conscious attention to the incoming sensory information is a critically important aspect of the human mind.

Norman ties together the various strands of research in this way -

> "If there really are simultaneous processes working, performing bottom-up data driven analyses as well as top-down conceptually driven ones, then the major limitation on what we can perform depends on how the resources are used . . . If we assume that well-learned tasks are those that have been 'automated' then we can see why we can perform several well-learned tasks simultaneously".[33]

Norman summarizes the ideas about attention and says,

> "Attention refers to a variety of concepts, each differing in meaning but each overlapping. The consideration of mental resources adds a unitary concept to the nature of attention. A person can direct processing resources in many different ways, concentrating sometimes on some aspect of sensory input through the sense organs, sometimes on the deep processing of internally generated ideas and sometimes on preparing for a forthcoming activity. Moreover the processing system is continually attempting to combine all sources of information at its disposal into a unified, understandable picture . . . It must be remembered, however, that there is some limit on how much processing can be performed at any time".[34]

Memory

It will be apparent from the earlier discussion that information about the past is required in the process of attention and in pattern recognition as

> "both require that incoming sensory messages be interpreted with the aid of the context of the messages and their past history".[35]

---

33 NORMAN, 1976, op cit, p.78.

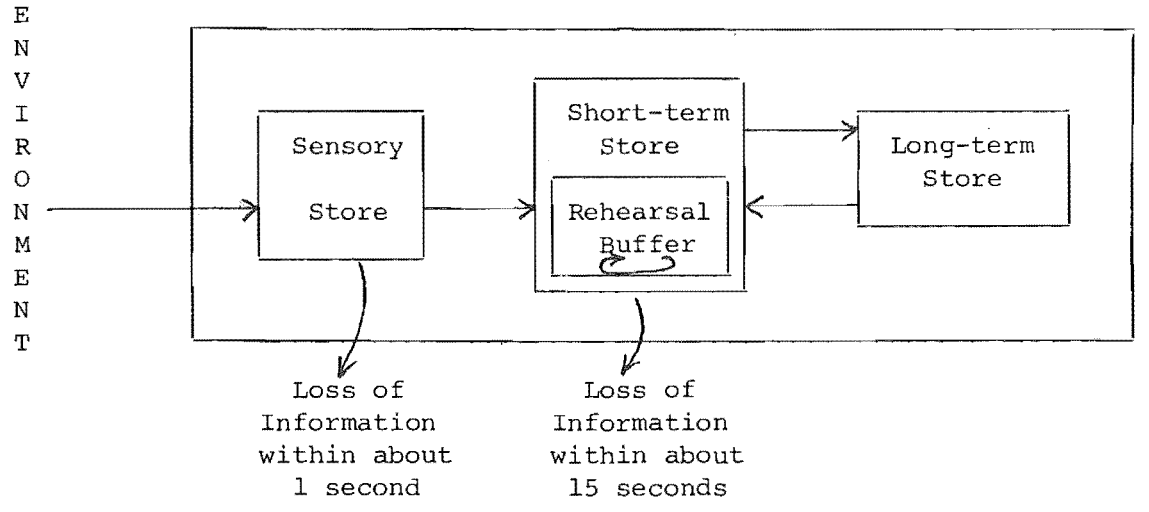
34 NORMAN, 1976, op cit. p.79-80.

35 NORMAN, 1976, op cit. p.83.

Thus memory is an essential aspect of the information processing picture.

Psychologists, in attempting to explain the happenings in the "black box" between the sensory input and the emerging output, postulate various mechanisms. The explanation of memory based on a summary of the research given by Norman is one approach which provides a useful model for improving our understanding of the process which can lead to more efficient listening to music.

Norman describes memory as having three stages, (i) a complete sensory image of just occurring events, (ii) immediate or short-term memory containing limited information from rapidly decaying sensory images, (iii) permanent or long term memory. This is presented by Loftus in diagrammatic form as below:



A Schematic view of the two-store memory System.
(Loftus and Loftus).[36]

The span of the immediate or short-term memory imposes limitations on the amount of information that one is able to receive, process and remember. In his well known article "The magical number of seven, plus or minus two" Miller writes of the limits on the number of items

---

36 LOFTUS, G. E., and LOFTUS, E., Human memory: the processing of information, Hillsdale, New Jersey, J. Wiley, 1976, p.8. Permission to use this diagram has been given by Lawrence Erlbaum Associates Inc.

of information that can be retained, the number of items being seven plus or minus two. He found that by a recoding process the amount of information remembered could be increased. For example if we can normally remember seven items, if each of those seven is coded to represent two things, we have actually learnt fourteen. This process of recoding is called "chunking" and is obviously very important as it is the way in which the bottleneck found at the immediate memory can be stretched.[37]

Rehearsal is another way of retaining information and it has been found that material learned or retained through rehearsal appears to be stored in a form related to the way it was performed. It would appear from the literature that the transfer of information from short-term memory to the long-term memory by the method of rehearsal is relatively weak and subject to interference. If the effort is directed to coding operations the strength of the stored information is increased because of using pre-existing associations. Decay occurs in the memory but it is not certain if the decay is due to the passage of time, or to interference from subsequent activities. Probably information in short-term memory is lost as a result both of time and interference. When new information arrives at the sensory system it cannot be organized and placed properly within the memory until understood and interpreted. The short-term memory provides a valuable holding place for newly arrived information.

What really matters about the newly arrived information is the type of processing the material receives and this is partly dependent on the nature of the task which is to be performed. If the material undergoes shallow cursory processing it leads to phenomena associated with short-term storage. Thorough deep processing leads to memory characteristics attributed to long-term memory. If the material undergoes maintenance rehearsal, using repetition, it is better for temporary storage, while elaborative operations involving coding, or using a meaningful connections strategy (in which people form associations and images and so on) make it better for long-term memory. The use of a coding or meaningful connections strategy is more appropriate for music because of the essential forward moving nature of music which would inhibit rehearsal strategies.

---

37 MILLER, G. A., "The magical number seven, plus or minus two: some limits on our capacity for processing information", Psychological Review 63, 1956, p.81-97.

Many theorists agree that perception involves rapid analysis at a number of levels or stages. Preliminary stages are concerned with the analysis of physical features such as pitch and loudness while later stages are more concerned with matching input against stored abstractions from past learning, i.e. pattern recognition and extraction of meaning. After a stimulus is recognised it may undergo further processing by enrichment or elaboration.

The reasons why material may not be processed to reach the long-term store are (i) the nature of the material, (ii) the limits on available processing capacity and (iii) the nature of the task set. Retrieval of information from storage depends on what occurs at the time of learning as work by Thompson and Tulving[38] suggests. Retrieval proceeds most effectively if the same plan is used to seek out material as was used to store it. Successful retrieval depends upon the appropriate organisation. Elaborate rehearsal strategies presumably guide the storage so as to make later retrieval easier.

Recognition and Recall

In the SHRMT the aspect of memory used was that of Recognition, not Recall. Recognition tests in fact lead to better performances than recall tests on information stored. Loftus and Loftus[39] give three major reasons why. Firstly, the guessing rate is better as the material is supplied in a recognition test. Secondly, in the recognition test only the information to discriminate between the target stimulus and the distractor stimulus is needed, not the "complete" information as would be required in a recall situation. Thus if the distractors are very close to the original or target material, the recognition task is more difficult. This was evident in the SHRMT and is discussed in the results. The pupils reported that in some items it was easier to reject certain distractors as they obviously did not match. The third reason is that in a recognition test the memory search is not for the whole material, but is rather to check if it has been presented before. A recognition task can be performed on the basis of sketchy, incomplete information in the long-term memory store, while for a recall task this would be insufficient.

---

38 THOMPSON, D. M. and TULVING, E., "Associative encoding and retrieval: weak and strong cues", Journal of Experimental Psychology, 86, 1970, p.225-262.

39 LOFTUS, G. E. and LOFTUS, E., 1976, op cit.

Another useful model of the memory is that provided by Piaget and Inhelder.[40] They define the memory as a store of information that has been encoded by way of a process of perception and conceptive assimilation. They point out that the memory changes in the course of a subject's development, do not simply reflect the level of encoding and recoding powers but that the code itself, is susceptible to change. This change may occur with age, reflecting not only the coding level of the subject but also the transformation of the code.

They describe the memory in terms of a hierachy consisting of recognition, reconstruction and recall with the recognition level being the lowest. Piaget and Inhelder distinguish sub-levels in each of the three categories, but for our purposes these comments are sufficient. Recognition in everyday life occurs in the presence of the object and involves spontaneous and continuous classification of known objects with new pigeon holes for whatever unknown elements appear. The recognition of a melody is an act of memory but the recognition of, for example, Vivaldi's style in an unpublished score calls for judgement and highly schematized comparisons. This demonstrates that within the category of recognition there may be quite a gradation of levels. Reconstruction involves the intentional reproduction of a particular action and its results - but the reconstruction is of a model which is no longer available for perception, and recognition occurs in the presence of the model. Recall occurs in the absence of the object and depends on actions and action schemata. As would be expected, performance is better on recognition tests than on recall ones. However, if the target is presented with distractors that are similar, recognition is more difficult, (see Underwood[41], Anisfield and Knapp[42], in Loftus and Loftus[43]).

---

40 PIAGET, J. and INHELDER, B., Memory and intelligence, London, Routledge and Kegan Paul, 1973, 414 p.

41 UNDERWOOD, B. J., "False recognition produced by implicit verbal responses", Journal of Experimental Psychology 70, 1965, p.122-129.

42 ANISFIELD, M. and KNAPP, M. E., "Association synonymity and directionality in false recognition", Journal of Experimental Psychology 77, 1968, p.171-179.

43 LOFTUS, G. E. and LOFTUS, E., 1976, op cit.

In all the discussions on memory it must be borne in mind that the memory for visual scenes is not as accurate as a photograph and the memory for sounds is nothing like a recording. The memory must be flexible and it must be possible to recognise the scenes and sounds we experience in new forms and to be able to relate, and form analogies and metaphors. At the same time memories must be rich enough and detailed enough to be able to provide us with information about a variety of questions long after the event has occurred.

DIRECTING ATTENTION

People concerned with the gaining of children's attention in order to retain programme ratings approach attention from a different position to that of the theoretical psychologists. Experimental work on this gaining and maintaining of attention is limited and the only available source appears to be Television and the Preschool Child by H. Lesser[44] which deals with the work done by the Children's Television Workshop (CTW) for the Sesame Street production and also with Soviet research on attention.

Before going on to look at the CTW basic assumptions about attention getting and holding, it is important to consider the particular attentional difficulties facing school pupils, and some concert attenders, in listening to some pieces of music. Often the task of attentively listening to the music requires a longer span of attention than these listeners possess. Attention spans differ (they may range from less than a minute upwards) but they usually improve with age. Much of the music in the repertoire of any experienced concert musician is longer than 3 to 5 minutes and thus presents the beginner listener (whatever the age) with some real difficulties. If the motivation is not very strong, as is often the case in the school setting, the gaining and holding of attention presents even greater difficulties and assumes even greater importance.

Despite the attraction of cheaper prices for school pupils at orchestral and chamber music concerts an increase in permanent subscribers does not necessarily occur because of the difficulties newer listeners experience in maintaining attention. In addition the programme notes may provide little useful information to help a would-be listener and all-too-often there is no attempt by the conductor to provide interesting explanations of what is to happen in the music. Experienced listeners

---

44 LESSER, H., Television and the pre-school child: a psychological theory of instruction and curriculum development, London, Academic Press 1977, 261p.

who are impatient to dispense with verbal guidelines should remember that it takes a considerable time to acquire a memory with enough meaningful connections to which to attach the various appropriate aspects in the music. It is indeed unlikely that the maximum value can be obtained from a piece of music unless the listener has previously been equipped with appropriate strategies. The aim in promoting listening experience is for the attainment of a pleasurable, total involvement which will have its own rewards. If the listening situation is unrewarding through loss of attention, either because of immaturity or because of inadequate preparation (for example lack of general background for making meaningful connections, lack of scanning strategies or lack of specific preparation for the listening experience at hand) then attempts at listening are unlikely to persist.

In general, unfamiliar pieces are likely to be more difficult to attend to. In a study Karen Zumbrunn[45] found that attention was hard to maintain in atonal and impressionistic music and that piano music was less successful in maintaining attention than orchestral music. Any music teacher wishing to introduce unfamiliar music to any group therefore needs to consider means of gaining, directing and holding attention. Bearing these matters in mind we will now consider the CTW assumptions and practices in relation to attention.

G. S. Lesser maintains

> "The principal pre-condition in order for learning to occur is attracting, directing and sustaining the child's attention." [46]

The basic assumption of the CTW was that catching a child's attention would be easier than directing or sustaining it. The Sesame Street programme devotes three quarters of its time to the principles, rules and techniques of attracting, directing and sustaining children's attention. In fact much of the Sesame Street research was devoted to testing the attention qualities of new material. This was done by the use of a distraction test involving the presentation of alternative material on a screen adjacent to the material being tested. Material that was attended to for 90% of the time was selected as suitable for the programme.

---

45 ZUMBRUNN, K., "A guided listening program in twentieth century music for junior high schools", Journal of Research in Music Education vol.20, no.3, 1972, p.370-378.

46 LESSER, G. S., "Learning, teaching and television production for children: The experience of Sesame Street," Harvard Educational Review 42(2) 1972, p.232-272, quoted in H. Lesser, op cit, p.57.

CTW assumed that the level of attention corresponded to the amount of learning that went on. However, subsequent testing found that comprehensibility was not as high as CTW hoped - a point to be noted in the search for attention gaining material. What should be aimed for is the gaining of attention in order to facilitate listening and involvement, rather than attention for attention's sake.

In considering their potential audience they assumed that:

(i) "Children have the capacity to dual-attend, that is that they can attend to more than one thing at a time.

(ii) Children may be unable to pick out the essential details, from the incidental, in an intended message.

(iii) Children have an inability to follow extended messages."[47]

In addition they assumed that children learn best what they want to learn.

Music was used extensively as an attention getting device. (Compare the use on radio of jingles to identify such things as the station, herald the news, weather, sports reports). The same material was frequently repeated because they considered that the use of the familiar recaptures the attention, provides opportunity for practice, of for example, the alphabet, and provides bridges from the familiar to the unfamiliar. It was not considered desirable to have a programme consisting of totally new material.

> "Humour, surprise, incongruity, animation and pixillation (speeded-up comic movements) may all be used to attract and direct attention to the important features of the material to be learned . . . The child's focus needs to be narrowed and directed to the salient features." [48]

The maintaining of the children's attention was best achieved, the CTW team assumed, by the use of diversity in programming as they recognised that children have a limited ability to sustain attention on a topic for more than a brief period. Inducing anticipation, as used in the alphabet recitations, for example, produced active participation and therefore sustained the children's attention. Changes of pace and mood were also used to sustain attention. They found that a slow peaceful item was more appealing when surrounded by fast moving episodes.

> "Interest in any particular episode is higher if it creates a pace and mood that looks, sounds and feels different from the one before." [49]

---

47 LESSER, G. S., quoted in H. Lesser, op cit, p.57.

48 ibid, p.53, in Lesser, G. S. 1972, op cit, p.254.

49 ibid, p.56, in Lesser, G. S. 1972, op cit, p.269

In addition to the CTW work H. Lesser refers to a review of Soviet research on attention by Yendovitskaya which distinguished two types of attention in young children - involuntary and voluntary. Involuntary attention "depends on the intensity of external influences or on the direct attractiveness of objects"; voluntary attention "is evoked and maintained by motives not directly related to its object."[50]

The attention of children becomes more stable, and wider in scope and more effective as they grow older. This Soviet finding was supported in a study by Greer, Dorow and Randall[51] who suggested that the listening attention span of children increased with age and training. They found that the older children stayed with the activities longer. Their study involved children from the ages of 3 to 12.

H. Lesser reported that increases in linguistic ability seem to be tightly tied to an increase in voluntary attention. Regarding the development of voluntary attention, Yendovitskaya says

> "The ontogeny of the development of voluntary attention, is such that the adult, with the help of words, expressive gestures and other actions, attracts the child's attention to various aspects of reality. Gradually the child learns to utilize these means for organizing his attention, which as a result acquires a mediating voluntary character." [52]

The development of voluntary attention depends on how well the child's activities are organized.

> "How clearly the task of action, its goals, and conditions are specified and whether or not the situational elements which are significant for the fulfilment of activity, are adequately identified determines the level of the child's attention. The cultivation of voluntary, premeditated attention is one of the important conditions in the child's preparation for training in school." [53]

---

50 YENDOVITSKAYA, T. V., "Development of attention", The psychology of pre-school children, ed. Zaporazhetz and Elkonin, Cambridge, Massachusetts, MIT Press, 1971, quoted in Lesser, H. 1977, op cit. p.58.

51 GREER, R. D., DOROW, L. G. and RANDALL, A., "Music listening preferences of elementary school children," Journal of Research in Music Education, vol.22, no.4, 1974, p.284-291.

52 YENDOVITSKAYA in Lesser, H. 1977, op cit, p.59.

53 ibid, p.60.

The acceptance of a level of involuntary attention - i.e. the more primitive kind based on attractiveness and newness - is limiting. The approach should be continually to encourage the development of the child to the more advanced forms of voluntary attention making use of the natural growth in the stability, scope and productiveness of voluntary attention.

In 1956 Kate Hevner Meuller pointed out that learning to read requires practice and

> "voluntary sustained (not spontaneous) attention, which is difficult for the 8 year old child, and will be difficult for the adult who has not acquired the attentive habits in arduous school hours . . . Acquiring these rudimentary skills in music is too often delayed to the High School or even the College years, and by that time the repetitive drill seems even more weary and the energy for sustaining high level attention to new materials is not so readily available." [54]

More than twenty years later the situation is no better: it is still not a universally practised skill and many pupils will go through their school years with little or no encouragement or training to perform well at it. Indeed the situation now is probably worse because of the use of music by radio and television in other ways than as a pure listening experience. As is shown by the CTW material, music is used deliberately to work for high television ratings but the same effort is not put back to promote music for music's sake.

CTW theorized

> "that music has a different (and special) function for children than it has for adults. For adults, music is mostly used as accompaniment to action and dialogue. But for children, music functions as a signal - a familiar character reappears, something interesting is about to happen".[55]

In our society children expect that something will happen "after" or "with" the music, rather than that the music will have a distinct life of its own, to be explored and appreciated for itself. As Lesser reports, CTW also worked on the theory that

> "A child's attention will be lost if the music is associated with static visual material. To be effective, music and sound effects must be integrated carefully with movement in the programme's visual content. . . It is assumed that music

---

54 MUELLER, K. H., "Studies in music appreciation", Journal of Research in Music Education, vol. 4, 1956, p.9

55 LESSER, H., 1977, op cit, p.59.

> accompanied by a static visual display, such as a seated orchestra or music accompanied by a static view of nature, will quickly lose the interest of a child. A possible reason for loss of attention by children to music accompanied by static visual displays is that it violates a child's expectations that televised visual action will accompany what he hears." [56]

This stated policy of encouraging children and adults to see music as an adjunct to other happenings, either visually presented on a screen or as a background to other activities, underlines the need to rediscover the art of listening.

The high competition for viewers, in order to maintain television ratings, also means that programmes are often geared to the lower level of attention, (described by Yendovitskaya as involuntary) while the voluntary level of attention is neglected. The unfortunate effect of this emphasis is that children develop the expectation that involuntary attention is all that is required from them.

This study of attention from a commercially dependent group together with the more academic approach of the psychologists described earlier provide useful insights into attentive listening behaviour. The studies also point to ways in which the insights could be utilized to improve listening performance.

The background research on attitude indicates that behavioural responses to music, including those in the school depend largely on the attitudes and practices formed by early upbringing. The background research on memory and information processing shows that for the quick processing of incoming stimuli there needs to be a well stocked store of previously processed information. People who have been fortunate enough to have been brought up with a wide variety of musical experiences will, by the time they reach High School (around age 13), have a considerable store of musical information available. For those not as fortunate, the immediate need at school is to acquire some musical background so that meaningful connections can be made for a wide variety of music.

The background research on attention indicates that deliberate steps need to be taken to help attention to move from the involuntary to the voluntary. Once again the earlier experiences of the home and school have shaped the pupils' performance in attending to music.

---

56 LESSER, G. S., Children and television: lessons from Sesame street. N.Y., Vintage books 1974, p.106. In Lesser, H., 1977, op cit, p.52.

It is apparent from the preceding material that the background from which pupils come has a dominant effect in the shaping of their attitudes, their ability to attend and their store of information. In the following section the musical background of a sample of pupils is researched in order to obtain some firm indication of the musical opportunities provided and also to compare, in relation to the SHRMT, the results of those from more advantaged backgrounds with those from less advantaged ones.

No attempt has been made in this study to measure objectively attitude to music, attention or memory skills as related to music listening.

MUSICAL BACKGROUND

The effect of the home background and other early musical experiences on the musical development of the child can scarcely be overestimated as witnessed to by the considerable number of articles on the subject. Zimmerman[57], Rowntree[58], Lundin[59], Farnsworth[60], Michel[61] and Shuter[62], to name but a few, all agree that the child's attitude to music and acquisition of musical skills is largely determined by factors operating within the home.

Gene M. Simons in a review of research findings sums up

---

57 ZIMMERMAN, M. P., "Musical characteristics of children", Research in the music classroom, No.1, Washington D.C., 1971.

58 ROWNTREE, J. P., A Longitudinal study of the musical development of children aged between eight and twelve years, Paper delivered at the third International seminar on research in music education, July 1972.

ROWNTREE, J. P., "A longitudinal study of musical development", Psychology of Music, vol.1, no.1, 1973, p.29-32.

59 LUNDIN, R. W., An objective psychology of music, 2nd ed. N.Y., Ronald Press, 1967.

60 FARNSWORTH, P. R., The social psychology of music, 2nd ed, Iowa, Iowa State University, 1969,

61 MICHEL, P., "Optimum development of musical abilities in the first year of life", Psychology of Music, vol.1, no.2, 1973, p.14-20.

MICHEL, P., Psychologic and aesthetic aspects of the personality building function of music and music education. Paper given at the International society for music education, Canada, 1978.

62 SHUTER, R., 1968, op cit.

> "Research and empirical evidence indicate that one's capacity for musical development is strongly influenced by the extent and nature of his/her musical experience during infancy and early childhood. Widespread recognition of this fact, and commensurate intensification of efforts in early childhood music teaching and research would contribute greatly to increasing the musical awareness, abilities, and aesthetic enrichment of future generations." [63]

Some of the specific implications that arose from this review of research were -

(i) That "a child's capacity for musical development can be elevated by parents or teachers who provide frequent positive music experiences during early childhood."

(ii) "The practice of providing less music training for younger children than older ones is contrary to research findings concerning ages of optimum achievement." (Zimmerman reports that there is a critical period for learning absolute pitch at about 3 years of age. There is another critical period when the child is about 5 or 6 years old. She reports that there are other critical periods in music development when drill and detail are most effective).[57]

(iii) "The use of good quality music during early years is important to the proper growth of aesthetic sensitivity."

Simons found that "Musical learning is related to maturation as well as environment." And that "early and effective training can eliminate the effect of disadvantagement."

In his study on the preschool disadvantaged Simons[64] found that children who came from musically disadvantaged homes could, if exposed to a carefully planned music programme, catch up with the children from musically advantaged homes. Shuter reported a similar finding from an investigation carried out in 1951 by Jamieson[65] in four Glasgow schools.

---

63 SIMONS, G. M., Early childhood musical development: a synthesis of research findings, 1960-1975. Paper given at the International society for music education, Canada, 1978.

64 SIMONS, G. M.,"The preschool disadvantaged: a study in music teaching and learning". Abstracts of research reports presented at biennial convention. Music education national conference, Atlanta, Georgia, 1972.

65 JAMIESON, R. P. G., "An investigation into songs known by Scottish school children and their musical preferences", Ed. B. thesis, Glasgow - Summary British Journal of Educational Psychology, 22(1) 1951, p.74-75, quoted by Shuter 1968 op cit, p.149.

Jamieson found that adverse home conditions could be partly counteracted by the schools' enthusiastic efforts to promote music.

These findings offer hope in that they demonstrate that initial disadvantages can be made up, but unfortunately even if one could get all educators to agree that musical experience is of primary importance, such a programme is unlikely to be implemented because of the time and cost involved.

The disadvantaged children in Simons' study came from poorer homes where there would not have been the money available for music lessons and other similar opportunities.

American studies relating to socio-economic factors and music also report some significant relationships. R. F. Wermuth[66] in a 1972 study examining the relationship between musical aptitude, family and student musical activity and socio-economic status found that high scoring students generally showed an early interest in music, played an instrument and had a family who played instruments.

A significant positive relationship between socio-economic status and the home interest in music, was found by J. D. Crawford.[67] His study showed that girls felt more positively towards music than boys did and that pupils with a high IQ had more musical interest shown at home than pupils with a low IQ Positive attitudes by teachers produced more positive attitudes in pupils towards music both in and out of school.

A survey of articles in the New Zealand Journal of Education Studies showed little recent work on socio-economic status and related topics. One study by Jane E. Kroger[68] related socio-economic status and the use of children's leisure time. While in comparable American studies it had been shown that parents at lower socio-economic levels show less concern over their children's use of leisure than parents of middle or upper levels, in New Zealand few meaningful relationships were found between socio-economic status and the individual's leisure activities. Because New Zealanders' sub-cultures are not as distinct and because there is a more

---

66 WERMUTH, R. F., in Abstracts of research reports from Music Education National Conference, Journal of Research in Music Education, vol.20, no.2 1972, p.228-229.

67 CRAWFORD, J. D., The relationship of socio-economic status to attitude towards music and home musical interest in intermediate (4,5,6) grade children, Doctoral dissertation abstract University of the Pacific. 1972.

68 KROGER, J. E., "Socioeconomic status as related to children's use of leisure", New Zealand Journal of Education Studies, vol.10, no.2, November 1975. p.128-134.

restricted range of socio-economic status than in the U.S.A. it is not surprising that the differences were not as marked. The results from the two schools involved in this project study will be examined later to see if there are any differences that can be attributed to socio-economic factors. (See Appendix F for the relevant information p.238).

Despite the lack of statistical evidence the author's experience in New Zealand schools would suggest that more children living in the so called "better" areas have instruments and music lessons than children from the less favoured areas. In 1980 the Christchurch School of Instrumental Music found in response to a questionnaire that the city areas considered to be "better" had considerably more pupils than those areas not as highly regarded.

Baker's[69] study showed that in her Christchurch sample there was a positive relationship between socio-economic status and the musical activities, both actively and passively engaged in.

THE MUSICAL BACKGROUND QUESTIONNAIRE

The Design and Administration of the Questionnaire

The importance of the home was recognised to be a primary influence on pupils. In order to establish the background from which pupils came to a music listening task, a questionnaire on their own musical performance and that of their family was administered. (See Appendix B p.189 for the Questionnaire).

This Musical Background Questionnaire (MBQ) had been designed for use with the author's M.A. study[70] and was used again with minor alterations. The MBQ was presented to the pupils and the questions for each section were given aurally with discussion about any puzzling aspect relating to any child's particular situation. The questions covered -

(i) the father's, mother's and sibling's involvement in singing and instrumental skills;

(ii) the pupil's own performance (lesson and examination details). Pupils were also asked

(iii) whether they wished to emulate any singer or player and if so, whom,

(iv) whether they attended concerts,

(v) whether they played records or cassettes at home,

---

69 BAKER, 1977, op cit, p.77.

70 WALLACE, M. J., Listening to form in music - unpublished M.A, thesis, Otago University, 1970.

(vi) how many records or cassettes they possessed.

They were also asked

(vii) if, given the opportunity, they would further this musical training by learning a new instrument and/or learning singing.

Another question

(viii) concerned whether the pupils would choose art, music, or drama, if the pupil was able to pursue only one.

They were also asked

(ix) if they could read music.

The advantage of administering a questionnaire in this manner was that it allowed free discussion of the issues raised by the questions. Definitions of what could be counted as "singing" and "playing" were given to the pupils. The findings of the MBQ will be presented in a later section.

Relationships to be examined in the results discussion

The relationships that will be examined in the discussion of the results of the MBQ involve the consideration of data in terms of the Age, Intelligence and Sex of the pupils.

The report by Gene Simons[71] indicated that musical learning is related to maturation as well as environment. Experience also shows that music skills improve with age. In view of the likelihood that older pupils will have more musical experience Age was chosen as one of the main effects. The sample was limited to two age groupings, Form 1 and Form 2. The results will be examined to determine whether there is a significant difference between the two groups.

Another issue which will be examined is whether pupils with higher Intelligence scores have had more musical opportunities in the home and school environment than those with lower scores.

Because it appears that it is more socially acceptable in New Zealand for girls to accept musical opportunities than for boys to do so, the results will be examined to see if there is a significant difference between the sexes.

As well the relationships between the SHRMT results and the variables from the MBQ together with Age, I.Q. and Sex will be examined to see whether pupils with more musical experience will perform better at a music listening task.

---

71 SIMONS, 1978, op cit.

RESEARCH BACKGROUND THREE

COMPOSER AND PUBLIC

The last area for research in this study within the field of music listening is the relationship between the composer and the listener. Composers, by reason of their creativity, may include in their works many unfamiliar and complex ideas that can usually be perceived only after many hearings and extensive analysis. The question that must be asked is to what extent does the composer expect, or hope, the listener will hear and understand these ideas. Does the listener feature within the composer's creative process and are there insights that can be given to enable the listener to have a better appreciation of the music?

These questions were put to a group of New Zealand composers and their answers are recorded in Appendix G, p.241.

In order to determine whether their responses are related to those of composers of other countries and other times a review of some relevant literature has been conducted. It will be appreciated that it is not possible to obtain from the literature answers which match all the questions used with the New Zealand composers. As well it should be remembered that over the space of time the relationship between composer and listener has changed. The emergence of listeners as a separate class of musicians, distinct from performers, is a relatively recent phenomenon. As Roger Sessions says

> "Listening to music, as distinct from reproducing it, is the product of a very late stage in musical sophistication, and it might with reason be maintained that the listener has existed as such only for about three hundred and fifty years. The composers of the Middle Ages and the Renaissance composed their music for church services and for secular occasions, where it was accepted as part of the general background, in much the same manner as were the frescoes decorating the church walls or the sculptures adorning the public buildings. Or else they composed it for amateurs, who had received musical training as a part of general education, and whose relationship with it was that of the performer responding to it through active participation in its production. Even well into the nineteenth century the musical public consisted largely of people whose primary contact with music was through playing or singing in the privacy of their own homes.

> For them concerts were in a certain sense occasional rituals which they attended as adepts, and they were the better equipped as listeners because of their experience in participating, however inadequately, in the actual process of musical production." [1]

With music occupying that kind of position in society it is not surprising that earlier composers had little to say about listeners. Burney's comment in an Essay in 1789 (see p.18 for the quote) that there was little help given for music listeners supports this view. The composers of the time obviously did not provide listening aids of any substance. In more recent times composers have been more articulate about their own thoughts on a wide variety of topics including their relationships with listeners. In this process they have been aided by editorial requests and biographers.

The difficulty experienced in finding direct comment by composers on the questions concerning listeners confirms the idea that the study of "listening" as such is a more modern pre-occupation. Collections of letters and biographies of earlier composers reveal little relevant material. This may demonstrate a disregard by the composer of the listener, it may represent an attitude that takes the listener for granted or it may indicate that the musical language was understood and so required no explanatory comment. It may of course simply reflect the editor's or author's lack of interest with listening as such. More recent composers are more vocal concerning these topics.

The comments collected below indicate some of the range of thoughts composers have had about the audience or the performers. A variety of response has been found concerning the extent to which composers think of those playing or listening to their works.

Robert Gerhard wrote that as

> "a composer I am concerned with the making of a piece of music; audience reaction is none of my concern." [2]

Lennox Berkeley agreed saying that the composer's "one obligation is to write good music." In general he wanted to communicate and give some enjoyment to people but he did not consider them more than that - the

---

1 SESSIONS, R., The musical experience of composer, performer, listener, Princeton, New Jersey, Princeton University Press, 1950, p.7.

2 GERHARD, R., "The composer and his audience", Twentieth century music 2nd ed. Ed. R. H. Myers, London, Calder and Boyars 1968, p.75.

audience "cannot occupy the primary position in his imagination." [3]

Other composers planned deliberately for their listeners,for example Paul Hindemith controlled his compositional techniques so that the listener should be able to understand what was happening. If the audience was well acquainted with symphonic music then the music could be more involved than if the audience was unaccustomed to such music. He considered the triad or its direct extensions could not be avoided for long in music without causing listeners problems. Hindemith disapproved of music that could not be grasped by players and listeners.[4]

Benjamin Britten reported that he wrote "music for human beings, directly and deliberately." When he was writing for voices he considered their particular potentialities and he considered the instruments available, their expressiveness and sonorities. Britten wrote that he also took

> "note of the human circumstances of music, of its environment and conventions... Almost every piece I have ever written has been composed with a certain occasion in mind, and usually for definite performers, and certainly always human ones." [5]

Composers who had had experience playing in orchestras were aware of the performers and the audience. Malcolm Arnold considered his playing experience had been very valuable to him allowing him to watch the instrumentalists and the audience react to music as it was being played.[6] Gunther Schuller, who played in a large orchestra for some time, was well aware of the forces operating within an orchestra and considered that greater dialogue between composers and performers would be of value. Having suffered the experience of having one of his works "massacred" by an orchestra with a resulting hostile audience reaction, Schuller was aware of the limitations that orchestras could place on composition.[7]

---

3 SCHAFER, M., 1963, op cit, p.83,84.

4 SKELTON, G., Paul Hindemith - the man behind the music, London, Victor Gollancz, 1975.

5 BRITTEN, B., "On winning the first Aspen award", Contemporary composers on contemporary music, ed. E. Schwartz and B. Childs, N.Y., Holt, Rinehart and Winston, 1966, p.116-117.

6 SCHAFER, M., 1963, op cit, p.149.

7 SCHULLER, G. in Hines R. S. ed. Essays on twentieth-century music by those who wrote it, Oklahoma, University of Oklahoma Press, 1970. p.188.

Another composer with performing experience, Alan Bush, came to believe that his music should be enjoyed by the performers as well as the listeners.[8]

Not all composers' definitions of a "listener" would be the same. Witold Lutoslawski indicated that when he used the term "listener" he meant an "ideal" listener rather than an average listener; a listener who had such attributes as musical memory, ability to forsee and react in the desired manner to different densities. Bearing this qualification in mind, Lutoslawski wrote that he composed music to evoke in the listener a series of specific reactions and that he was keen, as a composer, to lead the listener through his works. Clearly for him the listener was very important.[9]

Vincent Persichetti assured listeners that contrary to popular opinion, the contemporary composer was very pleased to have them listen to their music and was anxious to contribute to their musical enjoyment. He considered the problem of communication between composer and listener to be no greater than at other times of history.[10] It would appear from these comments that the composer's own personal experience and personal philosophy colours their thinking about the listener.

Egon Wellesz commenting on the first hearing of a piece said that he always listened to it

> "as a simple music lover first. Perhaps the second or third time I will try to analyse a work but the main thing is that what I hear must make an impression on me." [11]

The first hearing of a piece is very important as it may whet the appetite for further hearings (if that is possible), it may confuse the listener or it may repel because of the music's complexity or dissonance. A poorly presented piece frustrates both composer and audience as Gunther Schuller's earlier comment revealed. Limitations of resources either in terms of buildings or players also provide difficulties. Elizabeth Lutyens talked of the limitations which established buildings placed on music which had been conceived with a special sound effect in mind and of the difficulties that the listeners face especially at a first hearing. However, as far as her own music was concerned she believed that certain

---

8 SCHAFER, M., 1963, op cit. p.54.

9 LUTOSLAWSKI, W. in Hines, R. S. 1970, op cit, p.133-134.

10. PERSICHETTI, V. ibid, p.167.

11 SCHAFER, M., 1963, op cit, p.46.

of the formal features would be able to be heard at a first hearing.[12]

Charles Ives in an essay about beauty in music wrote that a piece considered to be beautiful on a first hearing will be found on further investigation to be made of sounds that had allowed the mind to go to sleep - they were sounds that were too familiar. Obviously listeners should expect to be challenged at first hearings of new pieces and wary of pieces that can be immediately labelled beautiful. Pieces that reveal most of themselves at a first hearing are going to be discarded as "out-of-date" and "boring" on repeated hearings.[13]

Form in music is very important and especially so in the larger forms of serious music. This necessity to deal with larger forms distinguishes "serious" composers from composers of pop music in which form is simpler and more basic. Arthur Benjamin in conversation with Murray Schafer remarked that he found form a difficult problem to overcome.

> "When I begin a work I never know what form it is going to take. I never say 'This will be my second subject, here I'm going to build a bridge, or it's now time for the recapitulation.' I feel these things instinctively when the proper time arrives. Practice too, has helped me to lose all sensations of adapting myself to the formal necessities of different works. I will say though, that large works are always more difficult. They require more mental planning, one's vision must be broader and one's memory stronger." [14]

Humphrey Searle said he had a good idea of the form before he began writing but he considered that the composer's idea of form might not be the same as the listener who is only familiar with classical music. It did not worry him whether or not all the formal elements incorporated in a piece were heard. For example the palindrome that he put into a quartet in 1948 was more an idea for distributing the material than an essential feature to be heard.[15]

Several composers said that before they began to write a piece they planned its form. Benjamin Britten pointed out that this did not mean every note was already composed and Peter Racine Fricker admitted

---

12 ibid, p.110-111.

13 IVES, C. from Essays before a sonata, New York, Knickerbocker Press, 1920, p.118.

14 SCHAFER, M. 1963, op cit, p.49.

15 ibid, p.132,134.

he might change his mind over some details half way through, but both had the basic details planned. Iain Hamilton's background in engineering gave him a fine sense of design which meant that form was of prime concern to him.[16]

Edmund Rubbra reported that although he used classical forms he felt he gave them a new personality and was never sure where a piece would go. He felt that in lengthy works the excitement of discovery would be lost if he worked out all the details initially.[17]

For Peter Maxwell Davies the nineteenth-century forms were not suitable models for the present time. In his own pieces he defines the "architecture" first, using certain proportions for the relationships between sections, and between them and the whole.[18]

Schoenberg writing about composition with twelve notes said

> "Form in the arts, and especially in music aims primarily at comprehensibility",

and went on to talk of the listener's satisfaction in being able to follow an idea through.[19]

It is apparent that form in music is very important for composers and any writings by them on particular pieces reveal the great detail built in. Much of this detail will be unappreciated by listeners and only those exploring the piece further with composer direction will grasp more fully the intricacies of thought. Some composers hope and expect that some of the formal details will be reasonably easily grasped. Alexander Goehr considered that listeners should be able to appreciate the form of his works and the various kinds of musical material used in the different sections.[20] It is evident from the previous comments that composers have different expectations concerning how much of the form of any piece will be noticed by listeners.

---

16 ibid, p.155.

17 ibid, p.67, 71.

18 ibid, p.175-176.

19 SCHOENBERG, A., Style and idea, translated Diva Newton, N.Y. Philosophical library, 1950, p.103.

20 SCHAFER, M., 1963, op cit, p.172.

Composers differ in their reactions to the provision of programme notes. Mahler mainly disapproved of their use but conceded that at the beginning, when his style was still foreign to listeners that "a few signposts and milestones along his journey" might be of use.[21]

Roberto Gerhard stated quite firmly

> "I am convinced that no verbal explanations the composer could provide can possibly affect the way in which the listener will finally come to terms with the work, as a result of the immediate and spontaneous experience of his own."

He goes on to talk about the practice of handing out programme notes and gives a word of caution.

> "To begin with, one has to distinguish between the sham and the genuine declarations...The sham ones are unmistakably *ad usum Delphini*, they are aimed at the listener. The genuine ones, especially when they come from the composer himself are to be found in technical magazines, are intended mainly for other composers who happen to be working on similar lines, and whose criticism is implicitly solicited because it may prove useful. The ordinary listener should disregard both...The arm-chair analyst...would be better advised to start, as an unprejudiced listener, with the experience of the work pure and simple."[22]

Elliott Carter was aware of the difficulties presented by some kinds of programme notes but on the other hand was prepared to use the programme note to give details which would aid the listener. In reply to a question about a programme note he had written Elliott Carter said

> "As musicians you are all familiar with the problems of program notes. Technical discussions baffle the greater part of the audience and the few who do understand are apt to feel that the composer is a calculating monster, particularly since musical terms are ponderous, not always very definite in meaning and too often give the impression of complexity when describing something very obvious to the ear. If I had described the augmentations, diminutions, retrograde inversions as they occur, this would have been positively bewildering to the public and would not have helped it to listen - certainly not the first time. So I tried to find a comparison that would

---

21 MAHLER, A. M. Gustav Mahler : Briefe, Vienna, Zsolnay 1924, p.187, Letter to Max Marschalk who had written programme notes for Mahler's First Symphony.

22 GERHARD, R. 1968, op cit, p.79-81.

> help the listener to grasp my general approach. Serious music must appeal in different ways. Its main appeal, however, emerges from the quality of the musical material or ideas and perhaps even more from their use in significant continuities, but does not always depend on grasping the logic of the latter on first hearing. There has to be something left for the second time, if there ever is a second time". [23]

Some composers, aware of the difficulties listeners face with contemporary music are concerned that its presentation will be as good as possible. The following comments indicate their concern and some of the difficulties.

Stravinsky wrote that "by definition contemporary music is unfamiliar" and went on to point out that the performance of a contemporary piece is a greater responsibility than the performance of a well known piece. If the performance of an unfamiliar piece is poor then the result will be a distortion which will falsely represent the music to the listener. With recordings being an important means of communication between the contemporary composer and his audience "the first recording of a piece is a risk".[24]

Theodor Adorno writes that

> "Schoenberg and Berg used to talk about 'first performance tempi'; they recommended playing works more slowly, before they had become quite familiar, so as to make it easier for the listener to understand the many themes heard both simultaneously and in sequence, and also to enable the composer to obtain a general impression of how his work sounds and to minimise friction in the actual apparatus of performance".

Adorno goes on to sound a warning that such a practice might make confusion for the listener.[25]

Milton Babbitt commenting on the difficulty of lack of rehearsal time reported that the rehearsal time allowed for a piece of his (Relata 1) was less than four hours. If even five minutes was allowed for each

---

23 CARTER, E. "Shop talk by an American composer", Contemporary composers on contemporary music, Eds. E. Schwartz and B. Childs, Canada, Holt, Rinehart and Winston, 1967, p.264-265.

24 STRAVINSKY, I. From "Dialogues and a Diary", Contemporary composers on contemporary music, op cit. p.55.

25 ADORNO, T. W. "New music and the public: some problems of interpretation", Twentieth Century Music, op cit, p.66.

measure, (a time that a professional soloist would consider inadequate) this would mean forty hours of practice. Babbitt suggested that to help the listener it would be better, instead of pointing them to unusual features, to direct their attention

> "to procedural sources, the technical traditions - even though the sources and traditions may be of recent origin"

for they provide a point of entry into the piece.[26]

Elliott Carter also commented on the difficulties of contemporary performance because of the financial considerations involved in rehearsals. Carter suggested that programmes should be presented that provided music of the recent past such as Stravinsky and Bartok as well as contemporary composers so that listeners can develop some background based on an understanding of the music of the recent past. Iain Hamilton also commented on the lack of a background to listening on the part of audiences, which he felt made listening to contemporary music more difficult. Carter considered that by clinging to the big orchestra, some American composers (apparently in an attempt to affirm their nation's musical maturity) are obscuring the trend towards smaller instrumental groups which not only provide better playing but also encourage better listening.[27]

Another difficulty mentioned by several composers was that the techniques demanded by contemporary composers have not been learnt or practiced by many orchestral players (in particular middle-aged ones). Gunther Schuller considered that the conductor had a responsibility to educate both the orchestra and the public. Clearly a conductor who is keen to present contemporary music well, can have a professional effect on its performance and reception.[28]

Wladimir Vogel felt that with some help and re-definition of ideas traditional listeners could follow his music. He had been concerned with a new type of oratorio but had used traditional ideas in his own style. The willingness of the listeners to be helped to extend their ideas would allow them to a greater or lesser extent to make gains in listening.[29]

---

26 BABBITT, M. in Essays on twentieth century music by those who wrote it, Hines, R. S. 1970, p.12.

27 ibid, 261-273.

28 ibid, p.183-202.

29 ibid, p.220-236.

Alexander Goehr considered that listeners could be helped by the use of direct repetition and he himself had tried this in some of his more recent works.

> "I don't think music can exist without repetition. In various pieces recently I've tried to solve this problem by removing the variation technique and allowing certain music to sound exactly the same when repeated, so that the listener can immediately recognize it. I don't share the hate of repetition that Boulez and others have. I believe a composer should always aim for clarity. And if this means a somewhat 'cruder' approach to musical composition, i.e. an approach in which the composer does not feel the necessity of varying every idea beyond recognition each time it occurs, then let it be 'cruder'".[30]

Several composers commented on the way in which listening should be approached. Malcolm Arnold talked of attending concerts "with an open mind," and Roger Sessions wrote of "the willing ear."

Stravinsky had something similar to say.

> "For in music, more than in any other branch of art, understanding is given only to those who make an active effort. Passive receptivity is not enough. To listen to certain combinations of sound and automatically become accustomed to them, does not necessarily imply that they have been heard and understood. For one can listen without hearing, just as one can look without seeing".[31]

Roger Sessions in more than one article emphasises the importance of repeated hearings and suggests "listening attentively and repeatedly" until the music sounds familiar. Byrd's comment from 1611 indicated that this is not a new approach.

> "a song that is well and artificially made cannot be well perceived nor understood at the first hearing, but the oftener you shall heare it, the better cause of liking you will discover and commonly that Song is best esteemed with which our eares are most acquainted." [32]

---

30 SCHAFER, M., 1963, op cit, p.171.

31 STRAVINSKY, I., Chronicle of my life, London, Victor Gollancz, 1936, p.247.

32 BYRD, W., from The collected vocal works vol.xiv London, Stainer and Bell, 1949, p.ix.

The difference between the response to music by sophisticated and unsophisticated listeners was noted by Jean Jacques Rousseau who wrote in 1753

> "Everybody in the world takes pleasure in listening to beautiful sounds, but if their experience is not enlivened by melodic inflections which are familiar, it will not be a pleasure nor will it change into sensuous enjoyment. To our way of thinking, the most beautiful melodies will always indifferently affect the ear which is not accustomed to them. Here is a language that requires the dictionary.
>
> Harmony, properly so called, is in an even less favourable position than melody. Having but conventional beauties, it in no way flatters inexperienced ears. A long habit of listening is necessary to sense and savor it. Untutored ears hear only noise in our consonances. When the natural proportions are altered, it is not surprising that the natural pleasure no longer exists." [33]

Burney wrote in 1789

> "With respect to excellence of Style and Composition, it may perhaps be said that to practised ears the most pleasing Music is such as has the merit of novelty, added to refinement and ingenious contrivance; and to the ignorant, such as is most familiar and common." [34]

Aaron Copland, a composer sensitive to the difficulties listeners may have is eager to foster helpful attitudes to listening and writes

> "The uninitiated music lover will continue to find contemporary music peculiar only as long as he persists in trying to hear the same kinds of sounds or derive the same species of musical pleasure that he gets from the great works of the past. When approaching a present day musical work of serious pretensions, one must first realise what the objective of the composer is and then expect to hear a different treatment of the elements of music - harmony, melody, timbre, texture, than was customary in the past... If you find yourself rejecting music because it is too dissonant, it probably indicates that your ear is insufficiently accustomed to contemporary musical vocabulary and needs more training - that is listening. Reading about a dissonant chord doesn't make it sound any sweeter, but repeated hearing certainly does." [35]

---

33 ROUSSEAU, J. J., "Essai sur l'origine des langues 1753" in Ecrit sur la musique, Paris, 1838.

34 BURNEY, C., A general history of music from the earliest ages to the present period 1789, (vol. 1 & 2), N.Y. Dover Publications, 1957, p.22.

35 COPLAND, A., "A modernist defends modern music," New York Times Magazine, Dec. 15, 1949, p.11.

Another area considered was the extent to which music is seen by composers to be a means of communicating a message and the part words play in that communication. Lennox Berkeley's comment shows a progression in his thinking from word dependence to freedom from words. Berkeley said that he had begun his composing

> "by writing a great many songs. In the early stages it seems, in some way or other, to be easier. Now I find it harder. It may be that, when one is still unsure of one's musical ideas, words are a help to the imagination; later, when one becomes more secure musically, one becomes more critical of the value of words in promoting musical ideas. One's sense of form is more acute. One has definite ideas about how one wants to shape one's music, and words can often be inhibiting." [36]

Gerhard's comment highlights the difficulty we have with language and the transfer of words and ideas from one area of human endeavour to another.

> "Communication is, no doubt, a function of language. But music is improperly called a 'language'. For all the obvious similarities in their respective structural organisations, it has become an increasingly misleading analogy to call music a 'language'. The sign, or rather the signal, in music never points to a 'signified' beyond and other than itself. On the contrary, it is intransitive, as it were; it arrests and focuses attention upon itself, and yet not so much upon itself as upon the mobilisation of a vast constellation of signals in their courses. The ear, said to be the musician's intelligence, is so very difficult to assess, that I keep on giving it the benefit of the doubt." [37]

Alexander Goehr talking with Murray Schafer about the diversity of approach to art said

> "I think the greatest difficulty in the communication of contemporary artistic thought is caused by not realizing that there is a whole range of possible outlets for expression. Some composers can write all types of music and can even combine them successfully in a single work. There is no question of artistic integrity here. It is obvious that the kind of music for a serious public, for example a string quartet, is not the same as that for selling toothpaste. Still, there is a relationship between the two." [38]

---

36 SCHAFER, M., 1963, op cit, p.90.

37 GERHARD, R., "The composer and his audience" - Twentieth century music op cit, p.83.

38 SCHAFER, M., 1963, op cit, p.168-169.

This brief summary of composer opinion demonstrates that composers as a group have a variety of approaches. It is apparent, however, that most of the composers are more concerned with their writing than with promoting contemporary music. However, composers who as a result of their experience as performers, conductors, or as listeners have reflected on the difficulties in listening have some useful comments for the promotion of contemporary music.

As indicated earlier questions which arose out of this review of the literature on the relationship between composers and listeners were put to a representative selection of New Zealand composers. These questions covered the topics of the composer's awareness of the audience, the extent to which composers make concessions to the audience and the aids for the audience in their difficulties with contemporary music.

The actual questions asked were as follows:

(i) To what extent do you think of the listener in your composing?

(ii) What do you hope will be heard by the average listener on the first hearing of one of your pieces?

(iii) How important is form in your composition, and how much of it do you hope listeners will grasp?

(iv) How much do you think a listener can hear?

(v) What do you think about the supplying of programme notes and other such aids for listeners?

(vi) What difficulties do you as a composer see in listening to contemporary music and have you any suggestions to help listeners?

(vii) What practical suggestions have you to encourage good listening?

(viii) Do you think in terms of communication of a message in your compositions ? What is the place of words in such communication?

The responses given to these questions are listed in Appendix G. A summary appears in the Conclusion (Part 4).

PART TWO

THE SECOND HEARING RECOGNITION OF MUSIC TEST

Sample

The pupil sample used for the SHRMT consisted of pupils from Branston and Kirkwood Intermediate Schools.[1]

TABLE 1 SHOWING AGE AND SEX DISTRIBUTION OF THE SAMPLE.

	FORM 1		FORM 2		TOTAL
	Girls	Boys	Girls	Boys	
BRANSTON	13	18	51	58	140
KIRKWOOD	87	128	54	56	325
TOTAL:	100	146	105	114	465

A sample from the Intermediate age group (11-13) was chosen for several reasons. In the author's experience pupils at this age are generally more receptive to musical activities including music tests as the more restrictive tastes of the adolescent age group have not yet become dominant. The responsiveness of the Intermediate and younger aged pupils to musical activities is a good reason why there should be more specialist teaching available in Primary and Intermediate schools. An Intermediate school sample is as wide a cross-section of the community as it is possible to find within the educational system. Both before and after Intermediate school there are more divergent schooling patterns. The two Intermediate schools used, draw pupils from sociologically different areas. Branston draws pupils from what is primarily a lower to middle socio-economic area, while Kirkwood serves what is basically a middle to upper socio-economic area.

Administration

Testing was carried out during a set period each week. The subtests of SHRMT were administered on different days followed by the MBQ. Pupils were tested in their own classrooms. The testing procedure for

---

1 Permission had been obtained from the Canterbury Education Board to test at three Intermediate Schools but one of these schools subsequently withdrew when the length of time involved in the testing programme was indicated. The sample was thus only two thirds of what had been planned.

the sub-tests was the same. After the test papers were distributed (see Appendix B, p.189 for copies of the papers) the test was administered by playing the recorded tape. Following the initial statement outlining the task (see Appendix A, p.185 for the script of the tapes) and the two Practice examples, the tape was stopped to allow the pupils to check their practice example answers and to allow time for any questions. Few questions were asked.

After the tape was finished the pupils were asked to turn their test papers over and to complete the questions on their methods of choosing the answers. A discussion was also held concerning their item preferences (fast or slow; long or short) and any difficulties they had experienced. Topics raised included the difficulty of

(i) paying attention long enough,

(ii) remembering the long items,

(iii) deciding which one to choose.

Pupils reported that they were able to reject two distractors reasonably easily but had difficulty with the two choices that seemed similar. The quality of the discussion varied but some good points were raised which brought out some of the essential issues about the test and the listening experience.

The testing was carried out in the third term of 1973.

The Scoring and Processing of SHRMT Results

The papers were marked by using a marking sheet and the results recorded. All the papers were checked in the process of calculating the Split-half Reliability.

Papers that were incomplete or obviously pattern marked were removed from the sample leaving the number completed at:

Shape or Melody	-	N = 437
Rhythm	-	N = 432
Texture	-	N = 430
Timbre	-	N = 417
Music Background Questionnaire	-	N = 465
All Five Tests	-	N = 280

The number completing all the papers was lower than had been hoped for, but the situation of being unable to use one school was beyond the control of the author. Tests which are spread over five successive weeks inevitably have gaps produced by pupils' absence from school.

The SHRMT results together with the pupils' PAT (Comprehension, Vocabulary and Listening) test results and their IQ score (from the ACER Intermediate Test D)[2] and details from the Musical Background Questionnaire were coded, punched and processed.

The Statistical Treatment of Results

The Chi square test of Independence and Significance was used to test agreement between the observed and expected results from the relationships outlined in the Research Hypotheses.

RESULTS AND DISCUSSION

In the following discussion of results considerable use has been made of the data from the errors. As Norman points out

> "the analysis of errors has proved to be a fruitful way of exploring the properties of memory".[3]

In this recognition test, the study of the distractors and their relative appeal can provide useful information about the strategies probably being employed. Norman says,

> "We assume an error occurs when only part of the stored representation of an item has been recovered, either because the remainder of the trace has temporarily eluded our attempts to recover it, or because it has been lost from the storage".[4]

---

2 These results were obtained from the schools. The IQ score was used extensively in the analysis but the PAT scores were not. The intercorrelation table Appendix E, p.224 shows the relationships between the variables. The correlation data between the SHRMT sub-tests and the PAT scores are all significant but not high. The correlation with the Total was the highest in each case. The PAT results were included to examine the relationship between verbal listening and musical listening. However the correlation between the total score and the PAT Listening was .223 - the lowest of the PAT scores. The Manual for the PAT tests explained that the listening tests were to measure simple recall skills and inferential comprehension. The SHRMT listening task was obviously testing a different aspect.

3 NORMAN, 1976, op cit, p.99.

4 ibid, p.98.

The relatively high level of errors means that in the use of the data there are sufficient entries in each column to satisfy χ^2 table requirements.[5] However, while the number of errors could have been lower, there was not time, money or available pupils, to allow for experimentation in order to achieve a better balance. (The withdrawal of one school from the programme after initial permission from the Education Board, reduced by one third the pupils originally planned for the study). The difficulties with the taping have been discussed elsewhere. (See Preparation of the Tape, p.46).

Discussions with the pupils after the tests, revealed that often they were sure that there were two distractors in an item that could be rejected reasonably easily, but that in the final choice between two, there was some difficulty. This suggests that the distinguishing features between the two are not considered by the pupils to be very great, and, given the situation that it is a happening in time, which cannot be checked over at will, the identification of the distractor most likely to be mistaken for the correct answer (the original) will provide useful information about memorable features.

The level of significance is set at $p < .05$ for this study.

Shape or Melody Results

See Table 2 for a Summary of the Results of the Shape sub-test.

The expected pattern of relationships was outlined in the research hypotheses at the end of the section on the SHRMT Shape or Melody sub-test, p.61 These Hypotheses will now be examined for support from the data provided in the results.

(i) Distractor alterations

Hypothesis

> The order of selection of the distractors will be such that the distractor in which the alteration maintains the outline will be chosen most, followed by the distractor in which the alteration is within the given range of notes. The distractor in which the alteration moves outside the given range of notes will be chosen least.

The hypothesis is supported.

---

5 See GARRETT, H. E. Statistics in psychology and education, London, Longmans, 1962, Chapter 10, p.247-275.

TABLE 2 SHOWING

SUMMARY OF RESULTS OF SHAPE SUB-TEST

	Item No.	CHOICE POSITIONS 1	2	3	4	Raw Score as %
SHORT ITEMS	3	218 50%	62 xx + 14%	120 x +++ 27%	37 xxx ++ 8%	
	8	30 x + 7%	34 xxx ++ 8%	146 xx +++ 34%	222 51%	
	10	40 xx ++ 9%	221 51%	97 xxx +++ 22%	78 x + 18%	
	12	103 xxx + 24%	45 x ++ 10%	166 38%	122 xx +++ 28%	
MEDIUM ITEMS	1	92 x +++ 21%	203 47%	82 xxx + 19%	58 xx ++ 13%	
	2	51 xx ++ 12%	65 x + 15%	164 38%	153 xxx +++ 35%	
	6	140 32%	115 xxx +++ 26%	131 xx + 30%	50 x ++ 12%	
	9	58 xxx + 13%	123 xx +++ 28%	81 x ++ 19%	173 40%	
LONG ITEMS	4	53 xx + 12%	90 xxx ++ 21%	126 x +++ 29%	166 38%	
	5	119 x +++ 27%	126 29%	82 xxx ++ 19%	107 xx + 25%	
	7	77 18%	137 x + 31%	112 xx ++ 26%	110 xxx +++ 25%	
	11	110 xxx + 25%	93 xx +++ 21%	180 41%	54 x ++ 13%	

The unmarked number represents the correct answer.

Key

Distractors with the alteration at the beginning x
Distractors with the alteration at the middle xx
Distractors with the alteration at the end xxx
Distractors with the alteration within the range of the piece +
Distractors with the alteration outside the range of the piece ++
Distractors with the alteration maintaining the outline. +++

The χ^2 value obtained for Table 3 (d)[6] is 222.6 which is highly significant. ($p < .001$). The same pattern of choosing distractors is seen in each of the (a), (b) and (c) tables and the level of significance for each is the same. ($p < .001$).

The fact that the most frequently chosen distractor was the one which maintained the outline, without preserving the exact intervals, is consistent with the work carried our by Deutsch, Dowling and others as described in the discussion on the background research to the Shape sub-test.

An apprehension of the outline is obviously one of the first pieces of information gained from the hearing of a melodic phrase. These results also suggest that the range of notes in a piece may be information that is assimilated at an early stage in listening. Additional research would need to be conducted to test this. It is apparent from Table 2 that as the items grow longer, the decision making becomes more difficult and the number of error answers increases. This is not surprising, as the long items were of 21-22 notes in length, a demanding task even for older and more experienced listeners.

(ii) Position of Alteration

Hypothesis

Alterations to the beginning, or the end of the original will be more easily detected than alterations to the middle.

The hypothesis is not supported. (See Table 4).

Table 4(d)[7] shows the results of all the items together and indicates that the difference between the categories was not significant. No consistent pattern is seen in the Tables 4 (a), (b) or (c). As far as the notes within the piece are concerned the effects of primacy or recency do not seem to be operating. (Both the position of presentation and the position of alteration are being investigated for the effects of primacy or recency in the SHRMT).[8]

---

6 The data for the Tables 3 (a), (b) and (c) was derived from Table 1. The raw scores for each type of distracor in each of the three lengths were added and put in the table and tested for significance. Table 3 (d) is the sum of Tables (a), (b) and (c).

7 The data for Table 4 was compiled by adding the beginning alteration answers, the middle alteration answers and so on.

8 See discussion p. 57.

TABLE 3 SHOWING THE COMPARISON OF ALTERATIONS TO DISTRACTORS IN THE SHAPE SUB-TEST

(a) Short Items

	Alteration Within range	Alteration Outside range	Alteration Maintaining outline	
f_o	273	156	485	914
f_e	304.7	304.7	304.7	914

$\chi^2 = 182.6$ df = 2 P < .001

(b) Medium Items

	Alteration Within range	Alteration Outside range	Alteration Maintaining outline	
f_o	336	240	483	1059
f_e	353	353	353	1059

$\chi^2 = 84.9$ df = 2 P < .001

(c) Long Items

	Alteration Within range	Alteration Outside range	Alteration Maintaining outline	
f_o	407	338	448	1193
f_e	397.7	397.7	397.7	1193

$\chi^2 = 15.6$ df = 2 P < .001

(d) All Items

	Alteration Within range	Alteration Outside range	Alteration Maintaining outline	
f_o	1016	734	1416	3166
f_e	1055.3	1055.3	1055.3	3166

$\chi^2 = 222.6$ df = 2 P < .001

TABLE 4 SHOWING THE POSITION OF DISTRACTOR ALTERATION WITH THE SHAPE SUB-TEST

(a) Short Items

	Beginning Alteration	Middle Alteration	End Alteration	
f_o	273	370	271	914
f_e	304.7	304.7	304.7	914

$\chi^2 = 21$ df = 2 P < .001

(b) Medium Items

	Beginning Alteration	Middle Alteration	End Alteration	
f_o	288	363	408	1059
f_e	353	353	353	1059

$\chi^2 = 20.9$ df = 2 P < .001

(c) Long Items

	Beginning Alteration	Middle Alteration	End Alteration	
f_o	436	365	392	1193
f_e	397.7	397.7	397.7	1193

$\chi^2 = 6.5$ df = 2 P < .05

(d) All Items

	Beginning Alteration	Middle Alteration	End Alteration	
f_o	997	1098	1071	3166
f_e	1055.3	1055.3	1055.3	3166

$\chi^2 = 5.1$ df = 2 not significant (.05 is 5.991)

(iii) Position of Presentation

Hypothesis

The first and fourth positions of presentation of the original will be more likely to be chosen than the second and third.

The hypothesis is not supported for the first position but is supported for the fourth.[9]

TABLE 5 SHOWING COMPARISON OF POSITIONS OF PRESENTATION OF THE CORRECT RESPONSES IN THE SHAPE SUB-TEST

	1	2	3	4	
f_o	435	550	510	561	2056
f_e	514	514	514	514	2056

$\chi^2 = 18.9$ df = 3 $p < .001$

The first position category for the presentation of the original is the one least chosen of the four showing that the primacy effect does not appear to apply. Position 4 in fact does have the highest entry but only by a small margin. The significance of the table comes from the low Position 1 entry and the three higher entries in Positions 2, 3 and 4. This data only partially supports the Research Hypotheses. The failure to recognise the original in Position 1 might reflect a feeling of "It might be better to wait and see if I was right" which could lead to subsequent confusion.

Marking strategies were discussed and it appeared that some pupils felt confident to decide immediately, accepting or rejecting the choices as they occurred. Others waited until the end before they made a decision. At that stage choosing between the two most likely options (which seemed to be the way pupils worked) would depend on a good memory for position. The recency effect seemed to be operating for Position 4.

A consideration of the positions of presentation of the distractors is not appropriate for this sub-test. While the randomisation procedure could deal with the position of presentation and the position of alteration within a test of this length, it could not deal with the type of distractor alteration involved in this test. Table 1 reveals, for example, that for

---

9 The data for Table 5 was compiled by adding all the first position correct answers, second position answers and so on. They were then tested for significance using the χ^2 test.

the short items Position 3 has the same alteration type i.e. the outline maintained alteration, which was the type of distractor chosen most often in this sub-test. Obviously combining unbalanced categories would produce misleading results.

(iv) Length of Items

Hypothesis

A greater number of the short items will be chosen correctly than either the medium or long items.

The hypothesis is supported.

The data in Table 6 shows clearly that the short items have been chosen more often.

TABLE 6 SHOWING THE COMPARISON OF CORRECT RESPONSES ON SHORT, MEDIUM AND LONG ITEMS "SHAPE"

	Short	Medium	Long	
f_o	827	680	549	2056
f_e	685.3	685.3	685.3	2056

$\chi^2 = 56.44$ df = 2 $p < .001$

The pupils' reply in answer to questioning about items indicated a strong preference for the short ones. In the longer Practice Example at the beginning of the test it was obvious that the pupils had some concern at the length of the piece.

(v) Tonality - Atonality

Hypothesis

Atonal and tonal items will be chosen correctly equally well.

The hypothesis is supported.

A χ^2 test of significance was used on the results of tonal and atonal items (matched for length). The result was not significant. This result suggests that both Tonal and Atonal items can be dealt with by pupils of Intermediate age and is consistent with the observation by Zenatti quoted by Dowling[10] in which children of age 11 could recognise tonal and atonal tunes equally well. In the SHRMT the items were longer

10 DOWLING, 1978, op cit.

than those used by Zenatti. It would appear that the Tonal-Atonal difference is not important in this test.

(vi) Singable Range

Hypothesis

Items in the singable range (treble clef items) will be chosen more accurately than those that are outside the range, in this case lower (bass clef) items.

The hypothesis is supported.

When the treble and bass items were compared the χ^2 result was significant.

TABLE 7 SHOWING COMPARISON OF TREBLE AND BASS SHAPE ITEMS

	Treble	Bass	
f_o	1088	968	2056
f_e	1028	1028	2056

$\chi^2 = 6.8$ df = 1 $p < .01$

(Using Yates contingency correction)[11]

Rhythm Results

See Table 8 for a summary of the Results of the Rhythm sub-test.

The expected pattern of relationships was outlined in the research hypotheses at the end of the SHRMT Rhythm sub-test, (p.67). These Hypotheses will now be examined for support from the data in the results.

(i) Position of Presentation

Hypothesis

(a) The first and fourth positions of presentation of the original will be more likely to be chosen than the second and third.

The hypothesis is not supported for Position 4 but is supported for Position 1.

The results in Table 10 show that Position 1 is the second most favoured position but Position 4 is the least favoured. The high value in Position 3 together with the lower values in Positions 2 and 4 contribute to the significant χ^2 value. The choosing of Position 1 could be accounted for by the primacy effect. Item 5 was a very easy item and its high score has contributed to the high value in Position 3.

---

11 See GARRETT, 1962, op cit, Chapter 10.

TABLE 8 SHOWING

SUMMARY OF RESULTS OF RHYTHM SUB-TEST

	Item No.	CHOICE POSITIONS 1	2	3	4	Raw Score as %
SHORT ITEMS	1	288 67%	35 xxx 8%	45 xx 10%	64 x 15%	
	2	55 x 13%	90 xx 21%	114 xxx 26%	172 40%	
	5	17 xx 4%	36 x 8%	356 82%	22 xxx 5%	
	9	99 xxx 23%	201 47%	96 x 22%	36 xx 8%	
MEDIUM ITEMS	7	74 xx 17%	132 xxx 31%	136 32%	88 x 20%	
	10	135 31%	99 x 23%	87 xx 20%	110 xxx 26%	
	11	59 xxx 14%	120 xx 28%	140 x 32%	113 26%	
	12	45 x 10%	113 26%	125 xxx 29%	145 xx 34%	
LONG ITEMS	3	98 xx 23%	62 xxx 14%	115 x 27%	157 36%	
	4	56 xxx 13%	111 xx 26%	182 42%	81 x 19%	
	6	99 23%	109 x 25%	83 xxx 19%	140 xx 32%	
	8	71 x 16%	140 32%	117 xx 27%	100 xxx 23%	

The unmarked number represents the correct answer.

Key

Distractors with alteration at the beginning	x
Distractors with alteration at the middle	xx
Distractors with alteration at the end	xxx

TABLE 9 SHOWING THE COMPARISON OF POSITIONS OF PRESENTATION OF THE DISTRACTORS IN THE RHYTHM SUB-TEST

(a) Short Items

	1	2	3	4	
f_o	171	161	255	122	709
f_e	177.3	177.3	177.3	177.3	709

$\chi^2 = 53.0$ df = 3 P < .001

(b) Medium Items

	1	2	3	4	
f_o	178	351	352	343	1224
f_e	306	306	306	306	1224

$\chi^2 = 71.5$ df = 3 P < .001

(c) Long Items

	1	2	3	4	
f_o	225	282	315	321	1143
f_e	285.8	285.8	285.8	285.8	1143

$\chi^2 = 20.3$ df = 3 P < .001

(d) All Items

	1	2	3	4	
f_o	574	794	922	786	3076
f_e	769	769	769	769	3076

$\chi^2 = 80.9$ df = 3 P < .001

TABLE 10 SHOWING THE COMPARISON OF POSITIONS OF PRESENTATION OF THE CORRECT RESPONSES IN THE RHYTHM SUB SECTION

	1	2	3	4	
f_o	522	454	674	442	2092
f_e	523	523	523	523	2092

$\chi^2 = 65.2$ df = 3 P < .001

TABLE 11 SHOWING THE POSITION OF DISTRACTOR ALTERATION WITH THE RHYTHM SUB-TEST

(a) Short Items

	Beginning Alteration	Middle Alteration	End Alteration	
f_o	251	188	270	709
f_e	236.3	236.3	236.3	709

$\chi^2 = 23.4$ df = 2 P < .001

(b) Medium Items

	Beginning Alteration	Middle Alteration	End Alteration	
f_o	372	426	426	1224
f_e	408	408	408	1224

$\chi^2 = 4.8$ df = 2 Not significant

(c) Long Items

	Beginning Alteration	Middle Alteration	End Alteration	
f_o	376	466	301	1143
f_e	381	381	381	1143

$\chi^2 = 35.9$ df = 2 P < .001

(d) All Items

	Beginning Alteration	Middle Alteration	End Alteration	
f_o	999	1064	997	3060
f_e	1020	1020	1020	3060

$\chi^2 = 2.9$ df = 2 Not significant

Hypothesis

(b) The second and third positions of presentation of the distractors will be more likely to be chosen than the first and fourth.

The hypothesis is supported.

Table 9(d) shows that Positions 2 and 3 have higher entries. However apart from the trend for Position 3 to be consistently high in all the tables there are no other consistent patterns.

(ii) Positions of Alteration

Hypothesis

Alterations to the beginning, or the end of the original will be more easily detected than alterations to the middle.

The hypothesis is not supported.

The χ^2 value for Table 11(d) is not significant. Although the "Middle Alteration" category has the highest number, the results do not reach significance. Patterns across the tables are not consistent.

(iii) Length of Items

Hypothesis

A greater number of the short items will be chosen correctly than either the medium or long items.

The hypothesis is supported.

When the Short, Medium and Long results were compared it emerged clearly that the Short items were chosen more often.

TABLE 12 SHOWING THE COMPARISON OF CORRECT SCORES ON SHORT, MEDIUM AND LONG ITEMS "RHYTHM"

	Short	Medium	Long	
f_o	1017	497	578	2092
f_e	697.3	697.3	697.3	2092

$\chi^2 = 224.5$ df = 2 $p < .001$

Discussion with the pupils showed that they preferred the short items.

(iv) Single Line and Multiple Line Presentation

Hypothesis

Items consisting of a single line of music and those of multiple lines will be chosen correctly equally well.

The hypothesis is supported

When the Single line rhythm and the Multiple line (chordal) rhythm presentation results were counted (Single 532, Multiple 498) and tested for significance, $\chi^2 = 1.4$ which was not significant. This would suggest that the pupils could recognise the rhythm in "ordinary" music and not just in a single line.

(v) Simple and Compound Time

Hypothesis

More items in compound time will be chosen correctly than items in simple time.

The hypothesis is supported.

The results of the Simple time items and the Compound time items were collected and compared.

TABLE 13 SHOWING A COMPARISON OF THE SIMPLE AND COMPOUND TIME RESULTS

	Simple	Compound	
f_o	493	591	1084
f_e	542	542	1084

$\chi^2 = 8.6$ df = 1 $p < .01$

The χ^2 value is significant. Compound time items were chosen correctly more often than Simple time items. This could be the basis of some future investigation to see if this result was supported. It must be remembered that the numbers are relatively small in this test (in terms of items and pupil sample) and so the conclusions reached must be taken in that context.

Texture Results

See Table 14 for a Summary of the Results of the Texture sub-test.

The expected pattern of relationships was outlined in the Research Hypotheses at the end of the SHRMT Texture sub-test, (p.71). These Hypotheses will now be examined for support from the data in the Results.

TABLE 14 SHOWING

SUMMARY OF RESULTS OF TEXTURE SUB-TEST

	Item No.	CHOICE POSITIONS 1	2	3	4	
SHORT ITEMS	2	28 xx 7%	47 xxx 11%	320 74%	32 x 8%	Raw Score as %
	3	39 x 9%	124 xx 29%	55 xxx 13%	209 49%	
	4	213 50%	109 x 25%	54 xx 13%	50 xxx 12%	
	5	72 xxx 17%	187 44%	95 x 22%	74 xx 17%	
MEDIUM ITEMS	8	132 31%	118 xxx 28%	94 xx 22%	83 x 19%	
	9	77 xx 18%	68 x 16%	122 xxx 28%	162 38%	
	10	74 xxx 17%	135 32%	136 x 32%	82 xx 19%	
	11	142 x 33%	66 xx 15%	201 47%	20 xxx 5%	
LONG ITEMS	1	102 xx 24%	74 xxx 17%	55 x 13%	197 46%	
	6	70 xxx 16%	80 x 19%	190 44%	89 xx 21%	
	7	35 x 8%	167 39%	121 xx 28%	107 xxx 25%	
	12	109 26%	146 xx 34%	112 xxx 26%	61 x 14%	

The unmarked number represents the correct answer.

Key

Distractors with the parts altered	x
Distractors with the bass altered	xx
Distractors with a change to the movement of the accompaniment	xxx

TABLE 15 SHOWING THE COMPARISON OF ALTERATION OF DISTRACTORS FOR THE TEXTURE SUB-TEST

(a) Short Items

	Number of Parts Altered	Bass Alteration	Accompaniment Change	
f_o	275	280	224	779
f_e	259.7	259.7	259.7	779

$\chi^2 = 7.4$ df = 2 P < .05

(b) Medium Items

	Number of Parts Altered	Bass Alteration	Accompaniment Change	
f_o	429	319	334	1082
f_e	360.7	360.7	360.7	1082

$\chi^2 = 19.7$ df = 2 P < .001

(c) Long Items

	Number of Parts Altered	Bass Alteration	Accompaniment Change	
f_o	231	458	363	1052
f_e	350.7	350.7	350.7	1052

$\chi^2 = 74.1$ df = 2 P < .001

(d) All Items

	Number of Parts Altered	Bass Alteration	Accompaniment Change	
f_o	935	1057	921	2913
f_e	971	971	971	2913

$\chi^2 = 11.5$ df = 2 P < .01

(i) Distractor Alteration

Hypothesis

The order of selection of the distractors will be such that the distractor in which the bass part is altered will be chosen most, followed by the distractor in which the direction of the accompaniment, with respect to the melody, is changed. The distractor in which the number of accompanying parts is altered will be chosen least.

The hypothesis is partially supported.

Table 15(d) shows results which produce a χ^2 of 11.5, $p < .01$. The "Bass Alteration" entry is the largest, followed by the "Number of Parts Altered" and the "Accompaniment Change". This order, however, is not found consistently throughout the tables. The high "Bass Alteration" entry in 15(c) is responsible for the size of the (d) entry. In 15(a) it is also the highest entry but by only a small margin and in (b) it has the smallest entry. The "Accompaniment Change" entries are lowest in (a) and middle in (b) and (c). The "Number of Parts Altered" entries were the lowest in (c), middle in (a) and highest in (b). The pattern presented is thus not consistent. The results for 15(c) in fact match the Research hypotheses concerning the distractors. This pattern of answers as in (c) reflects that the theorized vertical and horizontal scanning strategies being used may lead to the length being regarded more positively than it was in the earlier sub-tests since the entire length does not need to be remembered in order to make a decision. In vertical scanning operations length is a help.

The Research hypothesis is not supported by all the items but is supported by the long items. The comparison of accompaniments to tunes could usefully be investigated further.

(ii) Position of Presentation

Hypothesis

(a) The first and fourth positions of presentation of the original will be more likely to be chosen than the second and third.

This hypothesis is supported for Position 4 but is not supported for Position 1.

Table 17 shows that Position 3 is chosen most often followed by Position 4. The χ^2 value of 70.3 is at the .001 level of significance. The high value in Position 3 and the lower values in Positions 1 and 2 contribute to the high χ^2. The high value in Position 3 includes the result of the most popular item No. 2.

TABLE 16 SHOWING THE COMPARISON OF POSITIONS OF PRESENTATION OF THE DISTRACTORS IN THE TEXTURE SUB-TEST

(a) Short Items

	1	2	3	4	
f_o	139	280	204	156	779
f_e	194.8	188.3	188.3	188.3	779

$\chi^2 = 61.5$ df = 3 P < .001

(b) Medium Items

	1	2	3	4	
f_o	293	252	352	185	1082
f_e	270.5	270.5	270.5	270.5	1082

$\chi^2 = 54.8$ df = 3 P < .001

(c) Long Items

	1	2	3	4	
f_o	207	300	288	257	1052
f_e	263	263	263	263	1052

$\chi^2 = 19.6$ df = 3 P < .001

(d) All Items

	1	2	3	4	
f_o	613	832	844	598	2887
f_e	721.8	721.8	721.8	721.8	2887

$\chi^2 = 75.1$ df = 3 P < .001

TABLE 17 SHOWING THE COMPARISON OF POSITIONS OF PRESENTATION OF THE CORRECT RESPONSES IN THE TEXTURE SUB-TEST

	1	2	3	4	
f_o	454	489	711	568	2222
f_e	555.5	555.5	555.5	555.5	2222

$\chi^2 = 70.3$ df = 3 P < .001

Hypothesis

(b) The second and third positions of presentation of the distractors will be more likely to be chosen than the first and fourth.

The hypothesis is supported.

Table 16(d) shows that Positions 2 and 3 are clearly chosen more often, The high values for those positions and the lower values for Positions 1 and 4 contribute to the highly significant χ^2 of 75.1. The same pattern is found in Table 16(a) and (c). All the sections have highly significant results at a level beyond .001.

The high value in Position 1 in 16(b) is the result of a high value for that position in Item 11. A look at the item (see Appendix C p.214) shows that the distractor in Position 1 was a thickened version of the original. If the decision making was delayed until the end, it could be suggested that the choice between the two most likely would be between the original in Position 3 and the Position 1 distractor. The other two distractors were more obviously unlike the original. It could well be profitable for researchers to investigate the role of pupil confidence and delayed decision making in the testing and listening processes.

(iii) Length of Items

Hypothesis

A greater number of the short items will be chosen correctly than either the medium or long items.

The hypothesis is supported.

The results for the three lengths of the item were collected and compared.

TABLE 18 SHOWING THE COMPARISON OF CORRECT RESPONSES ON SHORT, MEDIUM AND LONG ITEMS "TEXTURE"

	Short	Medium	Long	
f_o	929	630	663	2222
f_e	740.7	740.7	740.7	2222

$\chi^2 = 72.6$ df = 2 $p < .001$

The high short item value contributes to the significant result. The short items were correctly chosen more often.

(iv) Number of Parts in the Initial Presentation

Hypothesis

The items initially presented in two parts will be chosen correctly more often than items presented in more than two parts.

The Hypothesis is supported.

The items were sorted into the two categories and suitable adjustments made in order to have matched items. (There were two short, two long and one medium item in the two part list so the three medium item results were averaged, in the more than two part, list).

TABLE 19 SHOWING THE COMPARISON OF THE TWO PART AND MORE THAN TWO PART ITEMS

	2 Part	More Than 2 Part	
f_o	1052	858	1910
f_e	955	955	1910

$\chi^2 = 19.5$ df = 1 $p < .001$

(Using Yates contingency correction)

The difference between the two groups is clearly significant with the pieces initially presented in two parts being more easily chosen. This result would be expected as a simpler presentation will be more easily recognised than a more complex one.

Timbre Results

See Table 20 for a Summary of the Results of the Timbre sub-test.

The expected pattern of relationships was outlined in the Research Hypotheses at the end of the SHRMT Timbre sub-test, (p. 73). These Hypotheses will now be examined for support from the data in the Results.

(i) Distractor Alterations

Hypothesis

The order of selection of the distractors will be such that the distractor with the alteration to the middle instrument(s) will be chosen most, followed by the distractor with the alteration to the bass instrument. The distractor in which the instrumentation is altered to a family (or another family) group of instruments will be chosen least.

The Hypothesis is supported.

TABLE 20 SHOWING

SUMMARY OF RESULTS OF TIMBRE SUB-TEST

	Item No.	CHOICE POSITIONS 1	2	3	4	
SHORT ITEMS	2	59 x 14%	113 xxx 27%	78 xx 19%	166 40%	Raw Score as %
	3	47 xxx 11%	98 xx 24%	183 44%	86 x 21%	
	5	111 27%	108 x 26%	148 xxx 35%	48 xx 12%	
	9	41 xx 10%	170 41%	110 x 26%	95 xxx 23%	
MEDIUM ITEMS	1	80 xxx 19%	108 26%	119 xx 29%	109 x 26%	
	7	106 26%	114 xxx 27%	140 x 34%	55 xx 13%	
	8	49 xx 12%	120 x 29%	168 40%	78 xxx 19%	
	11	35 x 9%	64 xx 15%	139 xxx 33%	177 43%	
LONG ITEMS	4	28 xx 7%	195 47%	93 x 22%	99 xxx 24%	
	6	80 xxx 19%	122 x 29%	139 34%	74 xx 18%	
	10	215 52%	43 xx 10%	99 xxx 24%	60 x 14%	
	12	59 x 14%	127 xxx 31%	92 xx 23%	132 32%	

The unmarked number represents the correct answer.

Key

Distractor with the Bass altered	x
Distractor with a Family of instruments	xx
Distractor with the middle instruments changes	xxx

TABLE 21 SHOWING THE COMPARISON OF ALTERATIONS OF DISTRACTORS FOR THE TIMBRE SUB-TEST

(a) Short Items

	Bass Part Instrument Altered	Alteration to Family of Instruments	Alteration to Middle Instruments	
f_o	363	265	403	1031
f_e	343.7	343.7	343.7	1031

$\chi^2 = 29.3$ df = 2 P < .001

(b) Medium Items

	Bass Part Instrument Altered	Alteration to Family of Instruments	Alteration to Middle Instruments	
f_o	404	287	411	1102
f_e	367.3	367.3	367.3	1102

$\chi^2 = 26.5$ df = 2 P < .001

(c) Long Items

	Bass Part Instrument Altered	Alteration to Family of Instruments	Alteration to Middle Instruments	
f_o	334	237	405	976
f_e	325.3	325.3	325.3	976

$\chi^2 = 43.7$ df = 2 P < .001

(d) All Items

	Bass Part Instrument Altered	Alteration to Family of Instruments	Alteration to Middle Instruments	
f_o	1101	789	1219	3109
f_e	1036.3	1036.3	1036.3	3109

$\chi^2 = 95.2$ df = 2 P < .001

The χ^2 for Table 21(d) is 95.2 which is a highly significant result, ($p < .001$). The same pattern is seen in each of the (a), (b), (c) and (d) tables supporting the theorising that pupils of this age will find it harder to hear parts lower than the melody through lack of practice and because their attention has probably not been directed to those features. The sound change involved in changing from one family of instruments to another should be more easily detected and the results supported this.

It should also be noticed that the number of errors was less in the long items which suggests that a vertical scanning strategy was operating and that length was not the same concern as in a task requiring a horizontal scanning strategy (as in the Shape items). The Medium Item table has higher errors than the Long items, (similar to the situation in the Rhythm and Texture sub-tests).

(ii) Position of Presentation

Hypothesis

(a) The first and fourth positions of presentation of the original will be more likely to be chosen than the second and third.

The Hypothesis is not supported.

Table 23 shows that Position 3 is the most often chosen but the difference between it and Positions 2 and 4 is not great enough for the χ^2 value to reach significance. Position 1 is in fact chosen the least as was the case in the Shape and the Texture sub-tests. The primacy and recency effects in relation to the presentation of the correct answers seems confused in this test.

Hypothesis

(b) The second and third positions of presentation of the distractors will be more likely to be chosen than the first and fourth.

The Hypothesis is supported.

Table 22 (d) shows a highly significant χ^2 value. Positions 2 and 3 have been chosen more than the other positions and throughout the (a), (b) and (c) tables this pattern is consistent. The χ^2 values are all highly significant. Position 3 is clearly the position which receives most attention with Position 2 in the next place.

TABLE 22 SHOWING THE COMPARISON OF POSITIONS OF PRESENTATION OF DISTRACTORS IN THE TIMBRE SUB-TEST

(a) Short Items

	1	2	3	4	
f_o	147	319	336	229	1031
f_e	257.8	257.8	257.8	257.8	1031

$\chi^2 = 89.0$ df = 3 P < .001

(b) Medium Items

	1	2	3	4	
f_o	164	298	398	242	1102
f_e	275.5	275.5	275.5	275.5	1102

$\chi^2 = 105.4$ df = 3 P < .001

(c) Long Items

	1	2	3	4	
f_o	167	292	284	233	976
f_e	244	244	244	244	976

$\chi^2 = 40.8$ df = 3 P < .001

(d) All Items Together

	1	2	3	4	
f_o	478	909	1018	704	3109
f_e	777.3	777.3	777.3	777.3	3109

$\chi^2 = 218.9$ df = 3 P < .001

TABLE 23 SHOWING THE COMPARISON OF POSITIONS OF PRESENTATION OF THE CORRECT RESPONSES IN THE TIMBRE SUB-TEST

	1	2	3	4	
f_o	432	473	490	475	1870
f_e	467.5	467.5	467.5	467.5	1870

$\chi^2 = 4.0$ df = 3 Not significant

(iii) Length of Items

Hypothesis

A greater number of the long items will be chosen correctly than either the short or medium items.

The Hypothesis is supported.

The results from the three groups were collated and the χ^2 calculated.

TABLE 24 SHOWING THE COMPARISON OF CORRECT RESPONSES ON SHORT, MEDIUM AND LONG ITEMS "TIMBRE"

	Short	Medium	Long	
f_o	630	559	681	1870
f_e	623.3	623.3	623.3	1870

$\chi^2 = 11.9$ df = 2 $p < .01$

The high χ^2 value is due to the high number in the Long length category and the low number in the medium. This result shows that the long items are the most chosen. This would indicate that there is a change in scanning strategy as suggested and that the length is now a more useful feature rather than a less useful one in aiding recognition.

The failure of the medium length items to continue the trend suggested in Table 24 is of interest because it points to another trend also noticed in both the Rhythm and Texture tables namely that there are fewer correct responses in the medium length items in these sub-tests. The fact that there are fewer correct responses in the medium length items than in the long and short items leads one to ask whether different processes are being used for the long and short items and whether the medium length items reflect the confusing changeover point in this, and/or ear dominance.[12]

(iv) Recognition of Items Presented by Families of Instruments

Hypothesis

The items presented by a family of instruments will be chosen more correctly than items presented by a mixed group of instruments.

The Hypothesis is supported.

---

12 See DEUTSCH and ROLL, op cit, 1976.

The results of the items which were presented by a family of instruments and those that were not, were collected, the items matched, and the results tested for significance.

TABLE 25 SHOWING THE COMPARISON OF ITEMS PRESENTED BY A FAMILY OF INSTRUMENTS AND THOSE NOT

	Family Instruments	Mixed Instruments	
f_o	940	675	1615
f_e	807.5	807.5	1615

$\chi^2 = 43.2$ df = 1 $p < .001$

The χ^2 value shows that the difference between the two figures is significant and that the items presented by a Family of Instruments were more often chosen correctly.

Summary

The results of the SHRMT sub-tests show that in the Shape sub-test

(i) short items were correctly chosen more often than medium or long items,

(ii) distractors with a similar outline to the original were more often confused with the original,

(iii) distractors going beyond the range of notes of the original were easier to reject than those whose alterations occurred within the range,

(iv) tonal and atonal items were chosen with similar frequency,

(v) Recency and Primacy factors as far as the position of presentation of both the originals and the distractors produced confused results. Alterations to the beginning, middle and end of the distractors also produced confused results.

In the Rhythm sub-test,

(i) short items were correctly chosen more often then medium or long items,

(ii) compound time items were chosen correctly more often than simple time items,

(iii) rhythms within a chordal presentation were chosen as well as those in a single line presentation,

(iv) information on position of presentation and position of alteration was confused.

In the Texture sub-test

(i) short items were correctly chosen more often than medium or long items,

(ii) alterations to the bass line were noticed a little less than the other types of alterations, the alteration in the number of parts accompanying the melody and the type of accompaniment change. The results however, were not clear cut,

(iii) items presented initially in two parts were chosen correctly more often than those presented in more parts,

(iv) the positions of presentation of the originals and the distractors once again provided confusing results.

In the Timbre sub-test

(i) long items were correctly chosen more often than the short or medium items - demonstrating, it was suggested, a change to a vertical scanning strategy from the horizontal strategy used in the other sub-tests,

(ii) alterations to or from a family group of instruments were noticed correctly more often than other alterations,

(iii) alterations to the instruments below the melody were more confusing to pupils especially the middle instruments. Bass part alterations were a little easier to detect.

(iv) the position of presentation of the original once again presents a confused picture. The position of presentation of the distractors matched the research hypothesis in this sub-test.

These results point to particular musical features that appear to be easier or less easy to recognise.

PART THREE

THE MUSICAL BACKGROUND QUESTIONNAIRE RESULTS

In this section the data collected from the Questionnaire will be analysed to determine what musical influences have impinged upon the pupils in the sample. This analysis will show whether there is any relationship between the musical background of the pupils and their performance on the SHRMT. These results will establish whether pupils with an enriched musical background achieve better in a music recognition task than other pupils.

After defining the variables the statistical procedures used will be described. First the relationships between the variables (such as Home or Personal units) and the three variables taken as main effects (Age, IQ and Sex) will be examined. Then the relationships between the variables and the results of the SHRMT will be examined.

MARKING AND RESULTS

The data collected in the Musical Background Questionnaire was marked and the results collated, (see Appendix B for a copy of the Questionnaire, p.189).

The questions in the Questionnaire covered:

(i) The amount of music in the home - derived from questions about the musical activities of parents and siblings. (Termed Home Units).

(ii) The amount of music in which the subject is involved (Termed Personal Units).

(iii) The aspirations of the subjects in regard to music (Termed Aspiration Units).

(iv) Whether or not the subjects played records or cassettes at home.

(v) Whether or not they went to music concerts.

(vi) Whether or not they could read music.

(vii) What a subject would choose to do given the choice of music, art or drama.

(viii) The approximate number of records or cassettes owned by the family.

(i) The mark for the Home Unit was derived from the answers to questions about the following:

(a) their Father's singing activities,

(b) their Mother's singing activities,

(c) their Sibling's singing activities,

(d) their Father's instrumental activities,

(e) their Mother's instrumental activities,

(f) their Sibling's instrumental activities.

The emphasis was on current performance rather than on past achievements. The question was asked if their parents belonged to any choirs, operatic or similar societies, taught singing or anything similar. Opportunity was given for discussion about any answers which presented problems. A point was given if either parent frequently sang around the home but was unable to belong to a Church choir or Music Society. This recognised the fact that some people may be very keen on singing although prevented by present circumstances (for example shift work or very young children) from belonging to some more regular group. A point was given for each person in the family actively engaged in singing.

Questions concerning the instrumental activities allowed a point for each instrument that a parent or sibling could currently play competently. A discussion was held to define the meaning of "play competently" and doubtful cases were dealt with individually. The marks ranged from 0 to 17 with only a handful of children reaching double figures. The person with 17 units had parents, a brother and a sister who sang in choirs and as well the father played four instruments while between them, the siblings played a number of instruments. For ease of dealing with the points they were reduced to a 6 point scale with these numbers corresponding.

Raw scores	0;	1,2;	3,4,5;	6,7,8;	9,10,11;	12+
Scaled scores	0	1	2	3	4	5

TABLE 26 SHOWING HOME UNITS DATA

A		0	1	2	3	4	5	
	GIRLS	37	83	53	24	6	2	205
	BOYS	82	97	61	15	3	2	260

The two top groups i.e. 4 and 5 were combined due to the small number of entries.

B

	0	1	2	3	4	5	
FORM 1	64	91	60	24	4	3	246
FORM 2	55	89	54	15	5	1	219

C

	0	1	2	3	4	5	
IQ LOW Stanines 1-6	52	75	42	8	2	1	180
IQ HIGH Stanines 7-9	56	89	65	27	6	2	245

Two groups are used instead of High, Average and Low, because the national IQ norms produce a relatively unpopulated Low group.

(ii) The points for the Personal Units came from the questions about their

(a) taking singing lessons (apart from school),

(b) belonging to singing groups - school, church or other,

(c) instruments that they were currently having lessons on,

(d) instruments that they could currently play,

(e) belonging to instrumental groups - either school or Saturday morning.[1]

Discussion with the pupils established what was meant by "playing an instrument". The emphasis was on current performance. Any problems pupils had were dealt with individually. Points were awarded for each entry, for example if a pupil belonged to two choirs they were awarded two points. The points gained ranged from 0-9. One of the pupils who obtained 9 points received them because she belonged to two choirs, could play four instruments and received lessons on two of them and in addition belonged to an instrumental group. Once again the marks were reduced to a 6 point scale with these numbers corresponding.

Raw score	0;	1,2;	3,4;	5,6;	7,8;	9+
Scaled score	0	1	2	3	4	5

As with the Home Units, the two highest groups (4 and 5) were combined, due to the small number of entries.

---

1 In Christchurch the School of Instrumental Music (CSIM), organises instrumental instruction and orchestral participation each Saturday morning. Instruments are available for hiring and the tuition fees are within the reach of most families.

TABLE 27 SHOWING PERSONAL UNITS DATA

		0	1	2	3	4	5	
A	GIRLS	27	79	59	27	11	2	205
	BOYS	130	89	25	10	5	1	260

		0	1	2	3	4	5	
B	FORM 1	100	88	39	15	4		246
	FORM 2	57	80	45	22	12	3	219

		0	1	2	3	4	5	
C	IQ LOW	73	70	25	8	3	1	180
	IQ HIGH	62	86	57	26	13	1	245

(iii) The points for the Aspiration data came from four questions each carrying one point. These questions took into account the pupils' aspirations regarding performance, as opposed to their actual performance. They were asked if they thought in terms of singing as well as someone they knew, in other words whether they had a singing model whom they knew, either personally or by reputation, for example from a record. They were asked to name the person. A similar question was asked about instrumental players. The other two points came from questions about whether they would like to learn an instrument, or if they were already learning one, whether they would like to learn an additional one. They were also asked whether they would like to learn singing.

TABLE 28 SHOWING ASPIRATIONS DATA

		0	1	2	3	4	
A	GIRLS	18	45	68	39	35	205
	BOYS	55	79	62	42	22	260

		0	1	2	3	4	
B	FORM 1	40	58	66	40	42	246
	FORM 2	33	66	64	41	15	219

		1	2	2	3	4	
C	IQ LOW	26	48	51	29	26	180
	IQ HIGH	42	64	67	44	28	245

(iv) The Listening to Records and Cassettes question involved a simple Yes or No answer.

TABLE 29 SHOWING RECORD AND CASSETTES LISTENING DATA

		Listen	Not Listen	
A	GIRLS	180	26	206
	BOYS	219	40	259

		Listen	Not Listen	
B	FORM 1	214	33	247
	FORM 2	185	33	218

		Listen	Not Listen	
C	IQ LOW	162	20	182
	IQ HIGH	197	41	238

(v) The Music Concert Attendance question also required a simple Yes or No answer. Discussion was held to establish the definition of a Music Concert.

TABLE 30 SHOWING CONCERT ATTENDANCE DATA

		Yes	No	
A	GIRLS	130	64	194
	BOYS	96	135	231

		Yes	No	
B	FORM 1	133	113	246
	FORM 2	113	104	217

		Yes	No	
C	IQ LOW	94	86	180
	IQ HIGH	141	101	242

(vi) Initially the Read Music question was intended to be a simple Yes or No choice but it emerged very quickly that there was a group who could read music a little (possibly as a result of school music lessons) who felt that while they did not fit the "Not read" category they were not fluent music readers. To deal with this, a new category, "Read music a little" was created. The marking was 0 for "Not read", 1 for "Read music a little" and 2 for "Read music."

TABLE 31 SHOWING READING MUSIC DATA

		Not Read	Read a Little	Read	
A	GIRLS	65	27	113	205
	BOYS	141	56	63	260

		Not Read	Read a Little	Read	
B	FORM 1	118	33	95	246
	FORM 2	88	50	81	219

		Not Read	Read a Little	Read	
C	IQ LOW	98	24	58	180
	IQ HIGH	94	45	106	245

(vii) Most pupils were able to choose between the Art/Music/Drama categories easily, but there were a few who were unable to choose between two which they said had equal appeal. These few were assigned by the toss of a coin to one or other of the two categories nominated.

TABLE 32 SHOWING CHOICE OF ART/MUSIC/DRAMA DATA

		Art	Music	Drama	
A	GIRLS	70	78	55	203
	BOYS	162	54	31	247

		Art	Music	Drama	
B	FORM 1	144	69	29	242
	FORM 2	88	63	57	208

		Art	Music	Drama	
C	IQ LOW	115	53	20	188
	IQ HIGH	117	73	51	241

(viii) The Possession of Records and Cassettes by the pupils' families was divided into three categories;

(i) under 25,

(ii) between 25 and 50,

(iii) over 50.

TABLE 33 SHOWING POSSESSION OF RECORDS AND CASSETTES DATA

		(i)	(ii)	(iii)	
A	GIRLS	32	61	98	191
	BOYS	28	58	160	246

		(i)	(ii)	(iii)	
B	FORM 1	22	76	135	233
	FORM 2	32	48	124	204

		(i)	(ii)	(iii)	
C	IQ LOW	22	50	104	176
	IQ HIGH	29	63	130	222

Statistical Procedures used in the analysis of the MBQ data

The five variables Home Units, Personal Units, Aspiration Units, Music Concert data and the Read Music data were analysed using a Multivariate Analysis of Variance programme with the three main effects of Age, Intelligence and Sex. Wilk's Lambda Criterion was adopted using Rao's approximate F distribution. The computer programme used was a revision of Bock's MANOVA programme developed at the University of Canterbury Computer Centre.

The results of the remaining variables, the Listening to Records and Cassettes, the choice of Art/Music/Drama and the Possession of Records and Cassettes were treated for significance by the use of the Chi square test.

DISCUSSION OF THE MBQ DATA

TABLE 34 SHOWING SUMMARY OF MULTIVARIATE ANALYSIS OF MUSICAL BACKGROUND DATA - AGE MAIN EFFECT

Test of roots 1 through 1	F 7.254	df(hyp) 5,000	df(error) 445,000	P Less than 0.001	R 0.275

Variable	F(1,449)	Mean Square	P Less Than	Means	
				F1 12.0 yrs	F2 13.0 yrs
Home	1.404	1.489	0.237	1.28	1.21
Personal	14.257	13.639	0.001^{xxx}	.93	1.37
Aspire	4.051	5.816	0.045^{x}	1.94	1.75
Concerts	1.740	0.411	0.188	.54	.50
Read Music	0.016	0.012	0.898	.91	.98

This table shows that Personal Units and Aspiration Units are the two results significant with Age as the Main Effect. As can be seen the Personal variable mean for Form 2 (1.37) is higher than that for Form 1 (.93) indicating that the Form 2 pupils have more Personal Units. Since these results were collected within one year it is not possible to say whether this particular Form 2 was a more musically able group of pupils than Form 2s of other years. Teachers are aware that there are observable differences from year to year between classes of the same form. This could account for the difference in means. However, the more likely explanation is that the Form 2 pupils would be more experienced musicians

continuing lessons already begun and therefore more ready to join in, for example, instrumental groups. It could also be that instruction on an additional instrument could occur during the Form 2 year.

The other significant result concerns the Aspiration variable and it can be seen from the means that the Form 1 mean of 1.94 is higher than the Form 2 mean of 1.75. It could well be that the Form 1 pupils have more unfilled aspirations than the Form 2 pupils. The first year at an Intermediate school is often a time for the expansion of pupils' horizons and the presentation of opportunities to try new musical activities. Most schools, if they have any musical instruments at all have only a limited number and the Form 2 pupils may well be given preference in the use of them. The pupils' expectations of being able to learn new musical instruments and belong to new groups may not be able to be fulfilled and may therefore lead to more Form 1 answers indicating a desire for further musical training.

The other means in Table 34 are very close to each other.

TABLE 35 SHOWING SUMMARY OF MULTIVARIATE ANALYSIS OF MUSICAL BACKGROUND DATA - INTELLIGENCE MAIN EFFECT

Test of roots	F	df(hyp)	df(error)	P Less Than	R
1 through 1	4.826	5,000	445,000	0.001	0.227

Variable	F(1,449)	Mean Square	P Less Than	MEANS	
				Low (Stanines 1-6)	High (Stanines 7-9)
Home	5.994	6.355	0.015^{x}	1.11	1.37
Personal	21.341	20.417	0.001^{xxx}	.86	1.35
Aspire	0.262	0.377	0.609	1.86	1.84
Concerts	0.777	0.184	0.379	.49	.55
Read Music	8.921	6.556	0.003^{xx}	.78	1.06

Table 35 has three significant results - for the Home, the Personal and the Read Music variables. The most significant means difference is seen with the Personal variable. The higher mean for the High Intelligence group is as expected because children with a higher IQ (assuming some effort) can learn more, faster and would be expected to be able to cope with more musical activity than the pupils in the lower IQ group. The relationship of the Read Music variable and Intelligence is as expected.

Pupils who are more able intellectually, learn to read music more quickly and if they had not been given the chance to learn to read music before they came to the Intermediate school, the limited time available for learning such a skill during school hours would favour the brighter pupils. The Home Unit Means for the two groups are closer but the mean for the higher Intelligence group is larger. In this case the explanation is probably that the children from more musically stimulating homes are more likely to have parents who provide opportunities for intellectual stimulation because in New Zealand society learning instruments tends to be regarded as an intellectual pursuit.

TABLE 36 SHOWING SUMMARY OF MULTIVARIATE ANALYSIS OF MUSICAL BACKGROUND DATA - SEX MAIN EFFECT

Test of roots	F	df(hyp)	df(error)	P Less Than	R
1 through 1	4.826	5,000	445,000	0.001	0.439

Variable	F(1,449)	Mean Square	P Less Than	MEANS	
				Girls	Boys
Home	11.847	12.562	0.001^{xxx}	1.44	1.10
Personal	89.283	85.415	0.001^{xxx}	1.61	.74
Aspire	21.726	31.194	0.001^{xxx}	2.14	1.62
Concerts	28.867	6.823	0.001^{xxx}	.66	.41
Read Music	42.650	31.346	0.001^{xxx}	1.23	.70

The results on this table show that the girls score significantly higher for each of the five variables. The means show clearly the difference between the sexes indicating that the girls have a much greater involvement in music than that of the boys. The greatest difference between the means is that for the Personal variable. As mentioned earlier it is more acceptable for girls to be involved in musical activities, to have lessons on instruments and to belong to instrumental and choral groups. The higher Read music mean is as expected, as greater music involvement would usually mean more reading of music. The Concert attendance data probably reflects the societal patterns once again, showing that girls more readily attend concerts. The higher Aspiration mean for the girls demonstrates that the girls are thinking more in terms of music than the boys as the Aspiration unit recorded whether they had music models such as the person whom they would like to copy in singing or playing and whether they thought in terms of further musical opportunities. The higher Home unit means tends to confirm the picture of the disadvantaged

male. However, this result together with the Personal unit result prompted a closer examination of the data. This is reported more fully later but shows that the high figure for the girls is due to the fact that proportionately more girls are involved musically than boys.

The other results not treated by the MANOVA programme were tested for significance by the Chi square test of Independence.

The Listening to Records and Cassettes data (see Table 29) shows that the majority of pupils are involved in this activity. The similarity of the entries lead to results which are not significant. The high response would agree with the observable behaviour patterns of this age group in society.

When the preference for Art, Music or Drama data was tested for significance the χ^2 value for each of the tables was found to be significant. For table 32 A $\chi^2 = 36.67$, for B $\chi^2 = 19.9$ and for C $\chi^2 = 10.4$. These results were all significant at the .01 level. The Art entries in tables A and B will have contributed to the significance, showing that boys would prefer to do Art more than the girls and that more Form 1 than Form 2 pupils would prefer to do Art. The IQ groupings show no preference. The girls show the greater preference for Music in the A table and in the C table the greater preference is by the higher IQ group. The Drama preference follows the same pattern as Music in these tables. Music in table B shows two close results and for Drama a preference by Form 2 pupils.

The popularity of Art in relation to Music may reflect a lack of music experience in the pupils' school careers. The teaching of art has been favoured more than music in many Intermediate schools in that there are art rooms and full-time art specialists while music makes do with the musical resources of the ordinary class-room teacher. At some schools a teacher who has more interest in music may direct the music programme for the whole school but they still are considered to be basically class-room teachers. They may take more music by exchanging subjects. This may produce good results because of a particular teacher's experience and enthusiasm but on the other hand the performance may be uncoordinated and inferior. At most Intermediate schools classes have a double period of art timetabled for the week while the music content in the timetable would often be only one period. Further, the timetabling for music is more likely to be altered than that for art as it involves a specialist room and a specialist teacher.

All pupils in their art classes are involved in the practical side of the subject while for music this may not be possible as the nature of the equipment for practical work is more expensive and requires good planning and control to produce a satisfactory outcome. Practical art work will have been experienced by all pupils from their earliest school days as it is an activity which is relatively easy to administer and is less likely to interfere with the activities of other classes. On the other hand, regular music activities are less likely to be experienced by all pupils as they depend much more on the abilities and interests of the particular teacher.

As a result of this it would appear that art is usually accepted as being an activity for all, while music may be viewed as being more exclusive. Much of the music instruction is, in fact, carried on outside the school programme and those exposed to it will either have had the necessary drive to have lessons organised or be receiving home support to be involved in that musical activity. Home support thus plays a more important role in the acquisition of musical skills than it does for art skills. Out-of-school music activities may be less popular with boys because of the conflicts with other "more manly pursuits" for example sport. Thus it is obvious that music and art do not enjoy the same status within the educational system and that good home support is necessary especially in the case of boys.

The data concerning the Possession of Records and Cassettes reveals some interesting detail. In Table 33 C which compares the high and low IQ groups data the results are so similar that there is no significant χ^2. Table A has a χ^2 of 8.75 which is significant at the .02 level. The higher boys entries in the (iii) column (owning more than 50 records or cassettes) has contributed to the significant χ^2 figure. In Table B the difference between the (i) and (ii) groups have contributed to the significance. Table 54 p.224 in Appendix E shows a correlation of .603 between the Possession of Records and Cassettes Data and the Listening to Records and Cassettes. However, what is not revealed by this relationship is the quality of listening, that is to say whether it is closely attended to or only used as a background of sound.

ADDITIONAL DISCUSSION OF SEX, HOME BACKGROUND AND PERSONAL PERFORMANCE DATA

The literature cited earlier (p.98) indicated that the home background was of importance in the musical development of children. In this study Personal performance emerges as being of greater significance than the Home background (see the Means quoted above for the MANOVA analysis and also the ANOVA results listed later in this section). Yet by implication the acquisition of personal music experience (instrumental lessons and so on) would be expected to be linked to parental attitudes and practice. In order to look at this more closely some of the Home units data together with some of the Personal units data have been abstracted for further consideration.

The Home Unit data for each pupil represented various contributing areas. Five categories from the Home Unit data were separated out for further consideration.

(i) Both parents involved musically - vocal and/or instrumental.
(ii) Father only involved.
(iii) Mother only involved.
(iv) Neither parent involved and no sibling involved.
(v) Sibling only involved.

The assumption was made that parental involvement would tend to be of greater importance than sibling involvement and so the addition of sibling involvement to the parental categories was not recorded separately.[2]

The Personal Unit data also represented various contributing areas. The data relating to instrumental lessons and playing was chosen as this was the area in which the greatest commitment to music is seen. For the pupils this involves time and effort spent on lessons and practice and for their parents money for lessons and instruments and possibly time spent in transportation to and from lessons. (Singing lessons were only taken by one pupil and this was included in with the instrumental lessons).

As far as the pupils were concerned, there seemed to be three categories of involvement,

---

2 In the session in which the musical background Questionnaires were filled out the meaning of "involvement" was discussed fully and was defined as relating to current performance.

(i) those who were currently taking lessons in music;

(ii) those who felt they could play one (or more) instrument(s) but were not currently learning. (Included in this group were pupils who had previously received private lessons and those who had learnt the recorder at a previous class or school);

(iii) those who were not taking lessons in music and were not able to play. This division, while not reflecting any absolute standard of performance, reflected their current involvement.

Some of the pupils in the (ii) group might well have preferred to be in (i) but were unable to do so because of lack of money or the lack of a suitable teacher. (In the Hornby area, where Branston Intermediate is situated there are very few music teachers and the average income is lower than for Christchurch as a whole).[3]

The Information from the Girls' Questionnaire was spread in this way:

TABLE 37 SHOWING DISTRIBUTION OF THE MUSICAL INVOLVEMENT OF THE FAMILY AND OF THE GIRL

	Father Mother Involved	Father Involved	Mother Involved	Neither Parent Involved	Siblings Only Involved	Totals
Girl Learns	23	8	32	7	18	88 42.9%
Girl Plays Does Not Learn	8	9	21	15	17	70 34.1%
Girl Does Not Play or Learn	6	5	13	15	8	47 22.9%
	37 18%	22 10.7%	66 32.2%	37 18%	43 21%	205

When the data was tested for Independence the $\chi^2 = 21.64$ (df = 8) which is significant at the .01 level.

3 GROUP PLANNERS LTD Hornby - People and their problems - A town planning study prepared for the Paparua County Council, 1974.

The higher values of the "Girl Learns" line in the "Father and Mother Involved" and the "Mother Involved" columns have contributed to the significant value, as have the lower values in the rest of the "Father and Mother Involved" column, the "Father Involved" column and the other lower values in the table. It is noticeable that the "Mother Involved" column is the most consistently populated one. The information from the Boys' Questionnaires was spread in this way:

TABLE 38 SHOWING DISTRIBUTION OF THE MUSICAL INVOLVEMENT OF THE FAMILY AND OF THE BOY

	Father Mother Involved	Father Involved	Mother Involved	Neither Parent Involved	Siblings Only Involved	Totals
Boy Learns	8	5	22	1	9	45 17.3%
Boy Plays Does Not Learn	14	11	16	14	18	73 28%
Boy Does Not Play or Learn	11	8	24	75	24	142 54.6%
	33 13%	24 9%	62 24%	90 35%	51 19%	260

For the Boys' data the χ^2 Test of Independence result was 58.41 which is significant beyond .001 (df = 8). The great difference in values in the "Neither Parent Involved" column will have contributed to the significant result as will the other low entries. Again the "Mother Involved" column is the most consistently populated.

TABLE 39 COMPARING FAMILY MUSICAL INVOLVEMENT OF BOYS AND GIRLS WHO LEARN MUSIC

	Father Mother Involved	Father Involved	Mother Involved	Neither Parent Involved	Siblings Only Involved	Total
Girl Learns	23	8	32	7	18	88
Boy Learns	8	5	22	1	9	45
	31	13	54	8	27	133

A comparison between the boys' and girls' who learn and their parental involvement showed that there was no significant difference $\chi^2 = 3.731$ (df = 4).

For this group of pupils it is noticeable that 98 (73.7%) out of 133 had some parental involvement. Pupils having no parental involvement totalled 35 (26.3%) of this sample. Once again, the column involving the "Mother Only" had the most entries, 40% of the total. About twice as many girls as boys had lessons.

TABLE 40 COMPARING FAMILY MUSICAL INVOLVEMENT OF BOYS AND GIRLS WHO PLAY BUT DO NOT LEARN MUSIC

	Father Mother Involved	Father Involved	Mother Involved	Neither Parent Involved	Siblings Only Involved	Total
Girl Plays Does Not Learns	8	9	21	15	17	70
Boy Plays Does Not Learn	14	11	16	14	18	73
	22	20	37	29	35	143

This data did not show a significant difference, when treated with the χ^2 Test of Independence $\chi^2 = 3.571$ (df = 4). Out of 143, 79 or 55% had some form of Parental Involvement and 64 or 45% had none, the "Mothers Only" column with 37, represents 26% of the total. The number of boys and girls in this category is almost the same - representing 28% and 34% of their respective samples.

TABLE 41 COMPARING FAMILY MUSICAL INVOLVEMENT OF BOYS AND GIRLS WHO NEITHER LEARN NOR PLAY

	Father Mother Involved	Father Involved	Mother Involved	Neither Parent Involved	Siblings Only Involved	Totals
Girl Does Not Learn or Play	6	5	13	15	8	47
Boy Does Not Learn or Play	11	8	24	75	24	142
	17	13	37	90	32	189

The χ^2 Test of Independence produced a result of 6.90 (df = 4) which is not significant. The pupils with no Parental Involvement, 122, represent 65% of the total. The "Mother only" column with 37 has the next highest result, which represents 20% of the total in this table.

There are three times as many boys in this category as there are girls and 70% of these boys have no parental involvement in music. Of this 70%, 17% have some sibling musical involvement. Of the girls 49% have no parental involvement but 17% of them have some sibling involvement.

TABLE 42 SHOWING COMBINED GIRLS' AND BOYS' GROUPS AND FAMILY MUSICAL INVOLVEMENT

	Father Mother Involved	Father Involved	Mother Involved	Neither Parent Involved	Siblings Only Involved	Total
Child Learns	31	13	54	8	27	133 28.6%
Child Plays does not Learn	22	20	37	29	35	143 34.5%
Child does not Play or Learn	17	13	37	90	32	189 40.6%
	70	46	128	127	94	465

This shows that:

(i) 198 (43%) children had Mothers involved in music. (70 from Fathers and Mothers, 128 from Mothers).

(ii) 116 (25%) children had Fathers involved in music. (70 from Fathers and Mothers, 46 from Fathers).

(iii) 244 (52%) children had some Parental involvement.

(iv) 221 (48%) children had neither Parent involved in music. (127 from neither parent, 94 from siblings only).

A look at the parental involvement columns (Table 42) indicates that the pattern of female involvement is being perpetuated from the mothers. The number of "Mothers Involved in Music" as compared with "Fathers" is higher in all cases. For the complete table the "Mother only" category is the highest (just) and when that is added to the number with the "Father and Mother Involved" the number of Mothers is 198 or 43%. (It should be noted that in the Home Units data there was no differentiation between male and female contributions to that number although from the figures in Table 42 it can clearly be seen that the female influence is more significant.

The results of the multivariate analysis of the five variables with the sex main effect reveal what might be termed the phenomenon of the musically disadvantaged male, for while the correlation between sex and IQ is below the level of significance (see Appendix E, Table 54) there are significant differences favouring the girls on the five variables analysed.

An illustration of this is provided by the fact that while boys and girls in the same performance group come from similar home backgrounds, the number of boys in the "Learn" group is proportionately smaller. (45 boys - 88 girls) representing 14% and 31% of their respective samples. The same picture of similar home backgrounds emerges from the other two performance groups. In the "Play, but not learn" group the boys (73) and the girls (70) have similar numbers: but in the "Not learn and not play" group the number of boys is much higher than the girls 142 - 47 which represents 55% and 23% of their respective populations giving an overall picture of the boys being disadvantaged musically.

These figures are supported by the enrolment figures for girls and boys at the Christchurch School of Instrumental Music in 1977 which were:

Girls	681	60.7%
Boys	441	39.3%
Total	1,122	

In cities and towns where there is not such a strong tradition of musical participation the percentage of boys would be likely to be smaller.

In part this disparity between the sexes is due to the home background as seen in the difference between the boys and the girls in the Home units. However the fact that the difference in the performance of the sexes is more pronounced in the Personal units ($\bar{X}_{Girls} = 1.62$, $\bar{X}_{Boys} = .74$) than in the Home units ($\bar{X}_{Girls} = 1.44$, $\bar{X}_{Boys} = 1.10$) indicates that social attitudes also constitute a significant influence. The major social influences apart from the home consist of (i) the peer group and (ii) the school system. While it was not possible to include in this study an analysis of the effect of these two factors on the sex difference the following and other observations confirm these contentions. Adolescent and pre-adolescent peer group pressure can often be seen to approve of girls engaging in wider musical activities such as learning musical instruments but to disapprove of boys doing the same. A graphic example of this is the instance of two boys at a school known to the

author, expressing interest in learning an instrument but who were worried about being seen carrying the instruments to school for lessons.

Whether deliberately or not, the school system often reinforces this stereotype of the New Zealand male as a person who is not interested in music. One example of this is that schools with a strong sporting tradition appear at times to suggest that sport is the only extra curricula activity in which an up and coming male should be involved.

What can be done to tackle the problem of the musically disadvantaged male? Firstly research suggests that children from musically disadvantaged homes may in fact catch up with a suitably planned programme.[4] Secondly children should be given an earlier chance to take up instrumental opportunities. By the time pupils reach secondary school (approximately 13 years of age) it is almost too late to take up some instruments, for example the violin, because of the impatience of pupils of that age group with the necessarily slow progress which they will make and also the negative influence of the adolescent peer group.

Lastly music educators must work to enhance the status of music in society as a whole, to reshape the New Zealand male stereotype and to campaign for the provision of music specialists in primary and intermediate schools.

THE EXAMINATION OF THE RELATIONSHIP BETWEEN THE MBQ AND THE SHRMT RESULTS

As stated earlier the relationships between the classificatory variables and the SHRMT will be examined to discover which contribute to a higher SHRMT score.

The derivation of the classificatory variables has been described earlier in this section. Sex and IQ are now taken as classificatory variables, not Main Effects. Some further collapsing of categories was necessary to reduce the problem of empty cells in these calculations. The Home, Personal and Aspiration Units were reduced to three categories 0 = no units; 1 = 1 or 2 units and 2 = 3 or more units. The Read music groups were reduced from three to two - a Not read music and a Read music group.

---

4 SIMONS, G. M. Early childhood musical development: A synthesis of research findings 1960-1975. Paper presented International Society of music education conference London, Ontario, 1978.

The dependent variable, the SHRMT was a test made up of four sub-tests, Shape, Rhythm, Texture and Timbre. Although they were each involved with a different aspect of music, all were concerned with a music recognition task. The fact that the sub-test results and the total result were grouped together in the first factor of a Factor Analysis[5] indicates clearly that they shared a common factor. In view of this the Total score of the test was used rather than the sub-test scores in these calculations.

Statistical techniques used in the examination of MBQ and SHRMT results

The relationships between the various classificatory variables and the dependent variable were examined by means of an Analysis of Variance (ANOVA) programme.

A number of programmes were run to analyse the seven classificatory variables. Unfortunately because of the empty cells problem not all the variables could be run together. For this reason several three way and one two way ANOVAS were conducted using various permutations of the classificatory variables, IQ, Sex, Personal Units, Home Units, Aspiration Units, Concert attendance and Read music. Two of these, (Home Units and Aspiration Units) failed to show significant Main Effects in any of these exploratory analyses, nor did they interact significantly with any of the other variables. The results are summarized in Tables 43 and 44 and 56 (p.226).

Results

IQ was a significant Main Effect in each combination in which it appeared. In three of the four cases it was significant at the .001 level and in the fourth case at .01. Table 44 shows the High IQ group mean to be 20.57 while that of the Low IQ group is 18.09.

It is not surprising that the higher IQ group scored better on the SHRMT. Any activities requiring close attention to instructions and involving multiple choice decision making such as in this test should be performed better by pupils with a higher IQ. The recognition task required a search and matching procedure. The use of longer items as well as medium and short items would have accentuated the effect of IQ as a result of an increase in the complexity of the task.

---

5 Factor 1 Shape .658, Rhythm .542, Texture .670, Timbre .733, Total .928. See also the Correlations Table Appendix E, p.224.

TABLE 43 SHOWING THE STATISTICALLY SIGNIFICANT MAIN EFFECTS AND INTERACTIONS

Number of Exploratory Analysis of Variance	Classificatory Variables Involved	Main Effects					2 - Way Interactions
		I.Q.	Sex	Personal	Read Music	Concerts	
1	I.Q. x Personal x Home	$p < .01$		$p < .001$			
2	Sex x Home x Read music		$p < .001$		$p < .001$		
3	Personal x Aspirations x Concerts			$p < .001$			Personal x Concerts $p < .01$
4	I.Q. x Sex x Personal	$p < .001$	$p < .01$	$p < .001$			I.Q. x Personal $p < .05$
5	Sex x Personal x Concerts		$p < .01$	$p < .001$			Personal x Concerts $p < .01$
6	Home x Personal x Aspirations			$p < .001$			
7	Sex x Aspirations x Read music		$p < .001$		$p < .001$		
8	Aspirations x Read music x Concerts				$p < .001$	$p < .05$	Concerts x Read music $p < .01$
9	I.Q. x Home x Read music	$p < .001$			$p < .001$		
10	Personal x Read music x Concerts			$p < .001$	$p < .05$		Personal x Read music $p < .05$
11	I.Q. x Personal x Concerts	$p < .001$		$p < .001$			I.Q. x Person $p < .05$ Personal x Co $p < .05$
12	Home x Read music x Concerts				$p < .001$	$p < .05$	Concerts x Read music $p < .05$
13	Personal x Read music			$p < .001$	$p < .05$		Personal x Read music $p < .01$

There were no 3 - way interactions.

TABLE 44 SHOWING MEANS AND SDs OF SHRMT TOTAL SCORES BY SEX, IQ, PERSONAL, HOME, ASPIRATION, CONCERT AND READ MUSIC UNITS

	Mean	SD
SEX		
Girls (N = 149)	20.89	5.24
Boys (N = 156)	18.27	4.06
IQ		
Low Stanines 1-6 (N = 102)	18.09	4.52
High Stanines 7-9 (N = 177)	20.57	4.58
PERSONAL UNITS		
0 Units (N = 79)	17.56	4.15
1 1-2 Units (N = 169)	19.76	4.49
2 3- Units (N = 39)	23.21	5.72
HOME UNITS		
0 Units (N = 60)	18.22	4.11
1 1-2 Units (N = 188)	19.72	4.72
2 3- Units (N = 39)	21.13	6.11
ASPIRATION UNITS		
0 Units (N = 42)	18.19	5.38
1 1-2 Units (N = 157)	19.39	4.51
2 3-4 Units (N = 88)	20.72	5.10
CONCERT UNITS		
No (N = 131)	18.62	3.96
Yes (N = 156)	20.46	5.41
READ MUSIC UNITS		
Not (N = 111)	17.87	4.05
Yes (N = 176)	20.73	5.05

Sex was also a significant Main Effect in each of the four combinations in which it appeared, twice at the .001 level of significance and twice at the .01 level. The Table 44 shows $\bar{X}_{Girls} = 20.89$ and $\bar{X}_{Boys} = 18.27$. Earlier discussion has established that the girls have been more involved in musical activities than the boys. Thus it is not surprising to find that the girls performed better on the musical tasks of the SHRMT.

The Personal variable was consistently a Main Effect at the .001 level of significance in each of the seven combinations in which it was run. Three groups were distinguished for the Personal variable,

(i) The group with no personal units whose mean was 17.56,

(ii) the group with one unit representing between one and four musical activities whose mean was 19.76, and

(iii) the group with two units, representing more than four musical activities who had a mean of 23.21.

It is not surprising that pupils with higher Personal units should perform better on a Music test such as SHRMT because they have already acquired some of the skills and vocabulary that are required in music tasks. The research on information processing pointed out that experience in any subject built up a suitable vocabulary and resulted in quicker processing of incoming stimuli.

The Read music variable was a Main Effect in all of the seven combinations in which it appeared. The level of significance was at .001 five times and at .05 twice. The means are $\bar{X}_{Read\ music} = 20.73$ and $\bar{X}_{Not\ read} = 17.87$. The Read music variable is closely related to the Personal variable as it represents part of the vocabulary of music skills that musicians acquire. Although some pupils may learn to Read music without learning to play an instrument, this is not usual. Most people who can read music have learnt to do so in the process of learning to play an instrument. Pupils who Read music should do better on the SHRMT.

The Concert variable was only a Main Effect twice out of six runs and the significance level was .05. The means for the two groups were $\bar{X}_{Attend\ Concert} = 20.73$ and $\bar{X}_{Not\ Attend} = 17.87$. The Concert variable indicates whether or not the pupils have attended concerts. The significance of concert attendance lies in the fact that at concerts voluntary listening occurs and directed listening (by means of programme notes or conductor explanation) may also occur. Any deliberate act of music

listening is likely to contribute to some degree to a better music listening test performance.

Neither the Home variable in five combinations nor the Aspiration variable in four, appear as a Main Effect, nor did either appear in any interactions. However the means of these variables show trends approaching that of some of the other variables. (see Table 44).

The four variables IQ, Sex, Personal and Read music were significant Main Effects each time they appeared while Concerts was a Main Effect twice.

The situation already described is somewhat complicated by the presence of a number of significant two-way interactions among the classificatory variables. These interactions are found between the IQ and Personal variables, the Personal and Concert, Personal and Read music and the Concert and Read music variables.

Interpretation of interactions (see Table 45, p.170)

The interaction between the IQ and Personal units variables (see Table 46) shown on the graph indicates that there is a difference between the low and high IQ groups means of 1.81 for those with no Personal Units. For the pupils with one Personal Unit the difference between the low and high IQ groups is 2.44. When the results for the pupils with two Personal Units are compared it can be seen that the high IQ group mean is 22.88 while the low IQ group mean is 26.25. This atypical result is due to the small number of entries (4) in the low IQ/ high Personal Units category. The dotted line on the graph represents the more likely pattern which would yield a mean of about 20. The pattern of a rise in scores for both groups as Personal Units increased is to be expected for the reasons given earlier.

The Personal and Concert variable interaction data when graphed (see Table 47) shows that within the group who have no Personal Units the SHRMT means for the Attend concert group and the not Attend concert group are similar ($\bar{X}_{Attend} = 16.96$ and $\bar{X}_{Not\ attend} = 17.92$). When both groups have one Personal Unit (which represents between one and four musical activities) a comparison of the means reveals that the Attend concert mean ($\bar{X}_{Attend} = 20.25$) is higher than the not Attend concerts mean ($\bar{X}_{Not\ Attend} = 19.04$). At the two Personal Unit position the Attend concert mean has increased to 24.03 which is a result that would be consistent with expectations but the not Attend concert mean has

TABLE 45 INTERACTION VARIABLE MEANS

IQ - Personal

Personal Units	0	1	2
IQ - High	18.54	20.78	22.88
IQ - Low	16.73	18.34	26.25

Personal - Read music

Personal Units	0	1	2
Read music			
Yes	17.00	20.69	23.39
No	17.77	18.42	19.00

Personal - Attend concerts

Personal Units	0	1	2
Attend Concerts			
Yes	16.96	20.25	24.03
No	17.92	19.04	18.67

Read music - Attend concerts

Read Music	Yes	No
Attend Concerts		
Yes	21.72	17.57
No	19.19	18.06

TABLE 46 GRAPH SHOWING THE INTERACTION OF IQ AND PERSONAL UNITS ON SHRMT TOTAL SCORE

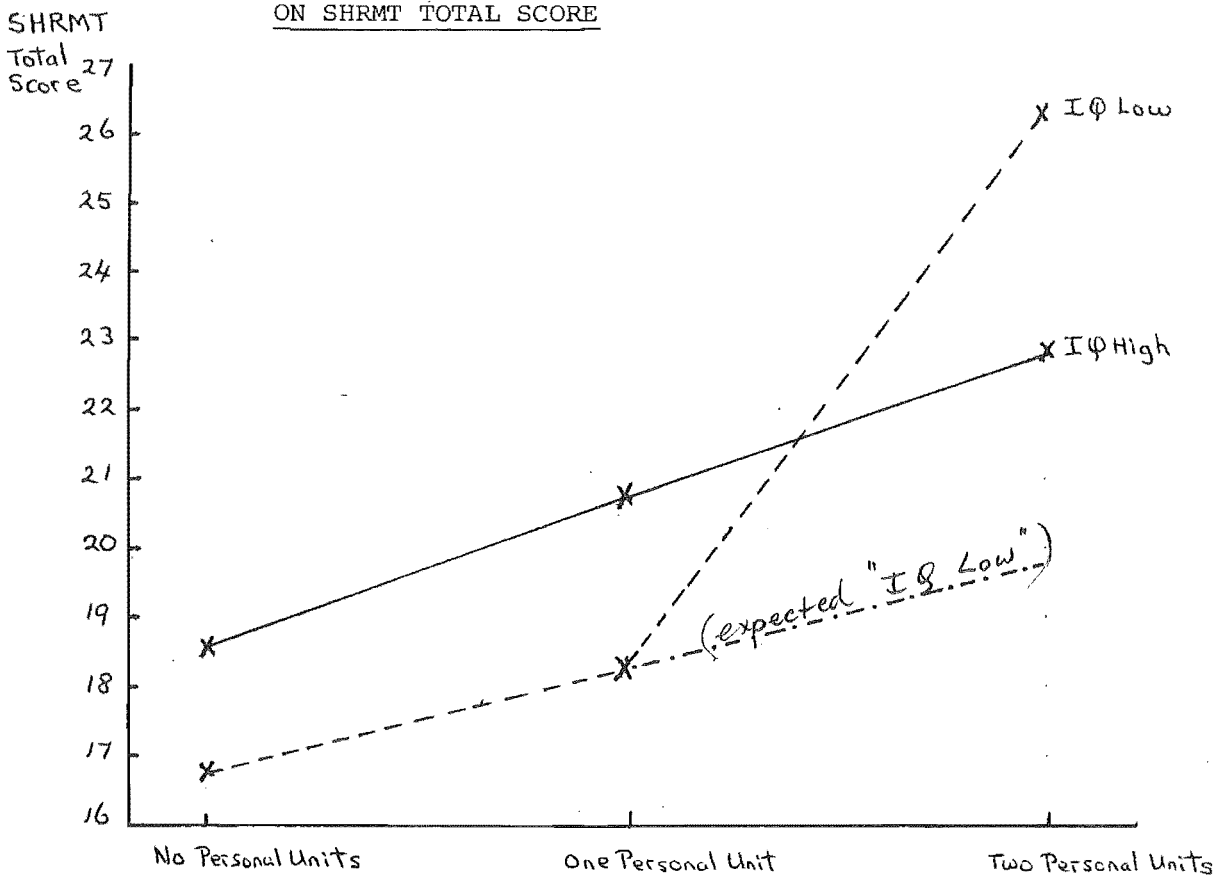
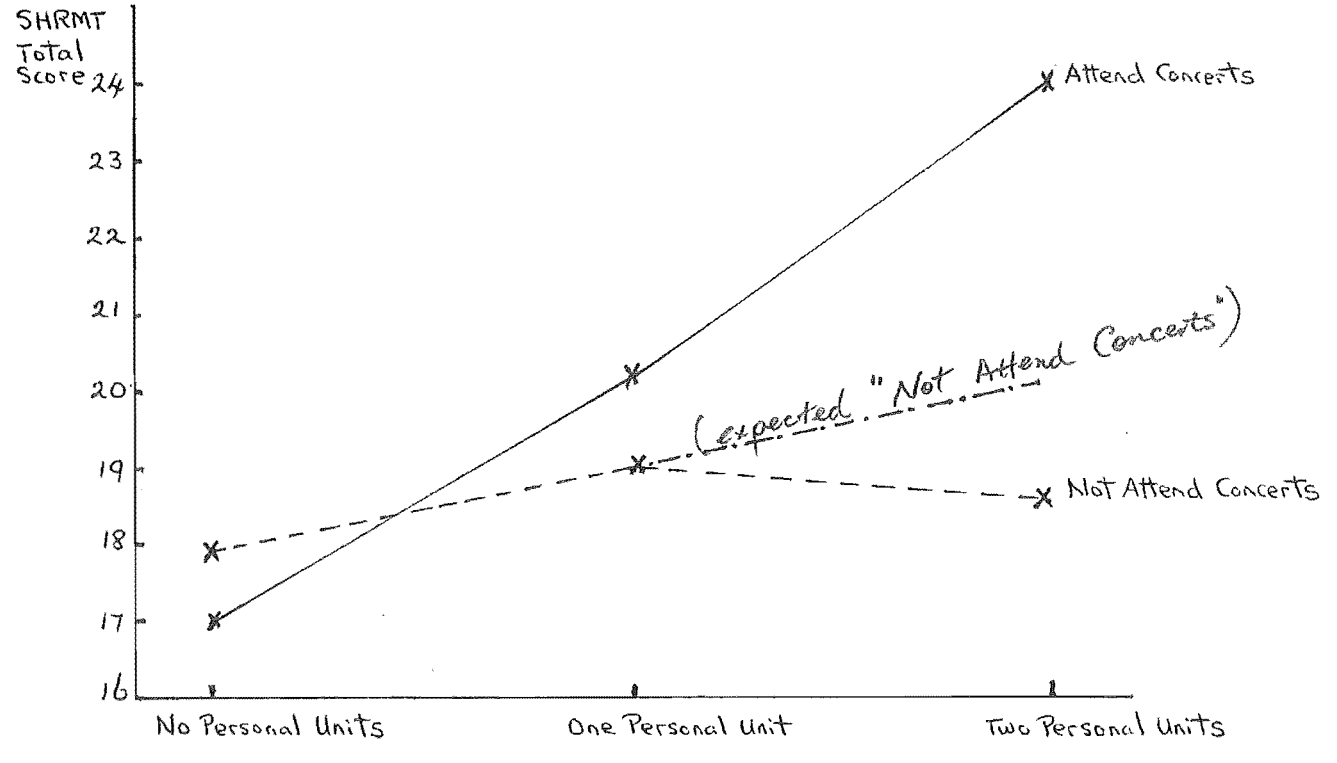


TABLE 47 GRAPH SHOWING THE INTERACTION OF PERSONAL AND CONCERT ATTENDANCE UNITS ON SHRMT TOTAL SCORE



fallen to 18.67, a result that is contrary to expectations. This could be accounted for by the low number of entries (6) in the category compared with the matching Attend concert group. The expected line has been drawn on the graph.

As mentioned earlier the pupils who Attend concerts are making a positive effort to be involved in a listening activity and this is most likely, at this age, to be with the full support of the family, both in terms of time and money. This strong encouragement to take part in such musical activities would suggest a strong musical interest within the home and also the means to encourage it. Pupils with higher Personal Units would be expected to perform better and the pupils who Attend concerts as well as having higher Personal units, would be expected to do even better in the SHRMT.

As already mentioned music readers and pupils with more personal musical activity generally scored better on SHRMT. The Personal units and Read music variables interaction (see Table 48) shows once again that the SHRMT means for the pupils with no Personal units are close $\bar{X}_{\text{Read music}} = 17.00$ and $\bar{X}_{\text{Not read}} = 17.77$. Those who Read music and have a higher musical involvement as shown by their Personal units, score better on SHRMT than those who do not. At the first Personal unit position the means for the music readers and the non music readers have separated with the $\bar{X}_{\text{Read}} = 20.69$ while the $\bar{X}_{\text{Not read}} = 18.42$. The second Personal unit position shows that the Read music mean is 23.39 and the Not read music mean has fallen to 10. This result is atypical and is due to the fact that there was only one member of that category. A dotted line on the graph indicates the probable direction which would give a mean of about 19.00. Between the close position of the means (where the music readers and the non music readers have no Personal units) and the two Personal unit position, the means of the two groups separate with the music readers scoring more highly. Pupils not reading music but having personal performance units were a small group as most of the pupils were learning an instrument which would involve learning to read. The one entry in the Not Read music/higher Personal unit category is thus not typical. The higher Personal units could have been acquired through membership in groups and by being able to play an instrument(s) without currently having lessons. Pupils who play the guitar or other instruments by ear could also acquire Personal performance units. Being able to Read music is closely related to Personal performance but as indicated above, some pupils with higher personal performance may have missed out on learning to read music.

TABLE 48 GRAPH SHOWING THE INTERACTION OF PERSONAL AND READ MUSIC UNITS ON SHRMT TOTAL SCORE

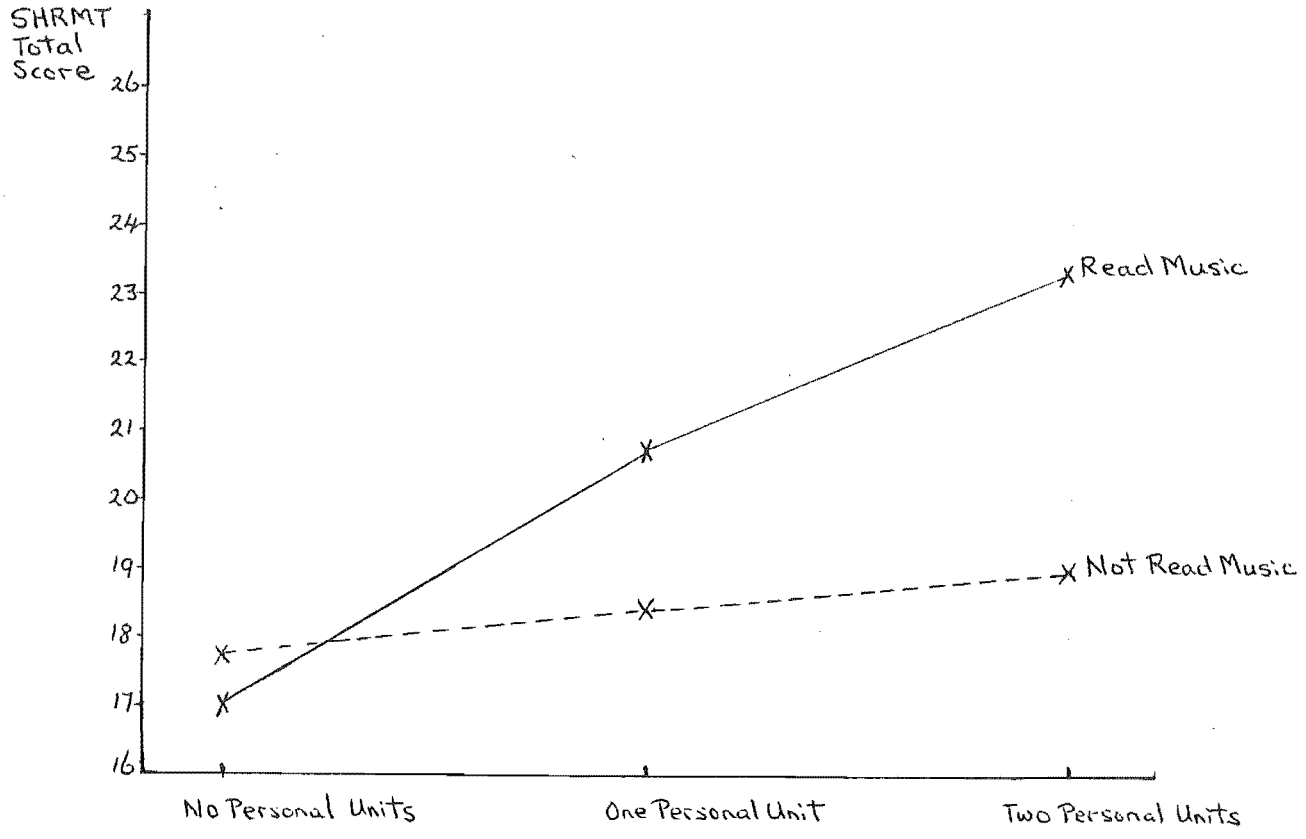
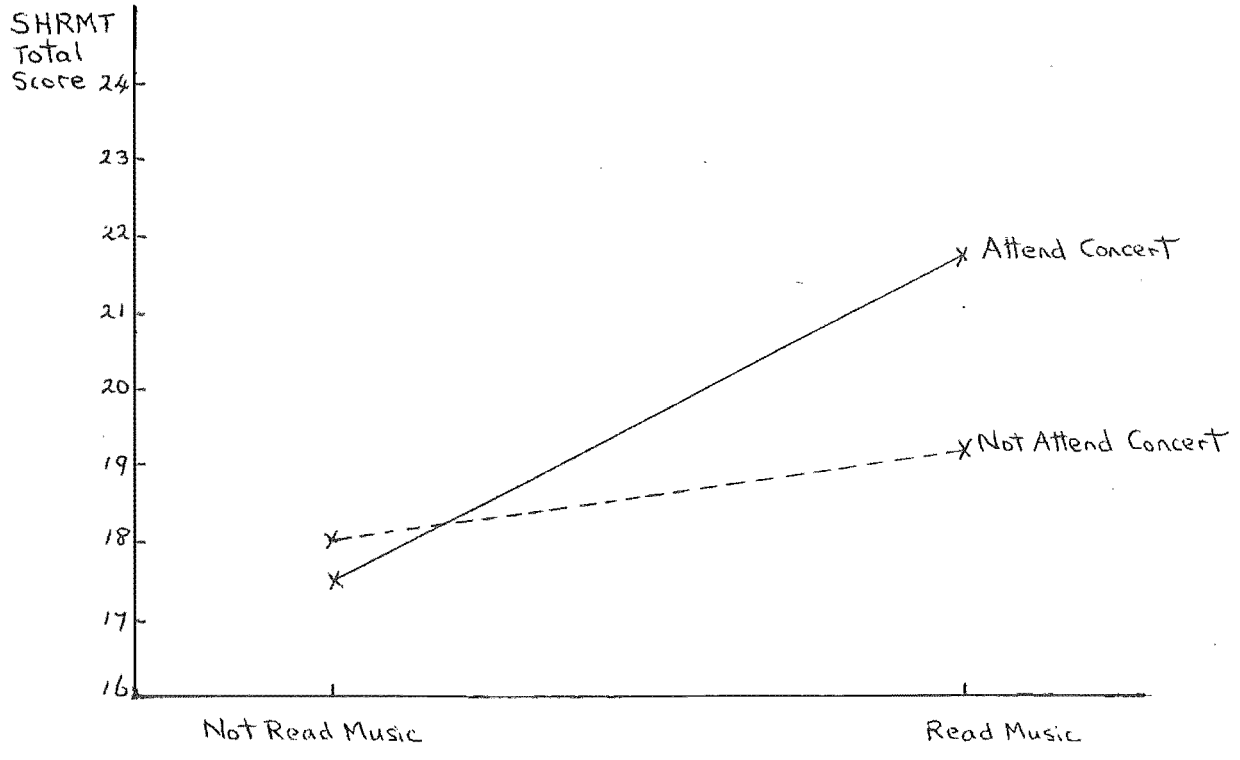


TABLE 49 GRAPH SHOWING THE INTERACTION OF READ MUSIC AND CONCERT ATTENDANCE UNITS ON SHRMT TOTAL SCORE



The interaction of the Read Music and Concert Attendance variables with respect to the SHRMT results shows (see Table 49) that the means for the Read and Not read groups who do not attend concerts are close. ($\bar{X}_{Read}$ = 17.57 and $\bar{X}_{Not\,read}$ = 18.06) but that when the means are compared for the Concert attenders the difference is greater. ($\bar{X}_{Read}$ = 21.72 and $\bar{X}_{Not\ read}$ = 19.19). The Concert attendance and the Read Music together contribute to a better score. The acquisition of Reading music skills and Listening practice in Concerts should contribute to a better SHRMT score.

Summary

The classificatory variables IQ, Sex, Personal Units and Read music all emerge as significant Main Effects in relationship to the dependent variable SHRMT. In each combination in which they appeared their results were significant. The Concert attendance variable also appeared as a Main Effect on two out of six runs.

These results show that pupils who read music and have a greater personal involvement with music by means of lessons and/or membership of musical groups are likely to score higher on the SHRMT. The home background of the pupils will be implicated because it is from the home that many musical opportunities originate but it appears that for the musical experience to be of the greatest value it must be personally performed. The fact that a greater percentage of girls than boys is to be found in these categories will account for the sex main effect. As music can at times be a very complex activity it is not surprising that higher IQ and greater music performance in this test are related.

The interactions have arisen in two ways,

(i) in the IQ and Personal Units case because one mean was atypical due to the small number of entries in the low IQ/high Personal Units category,

(ii) in the Personal and Concert, the Personal and Read music and the Concert and Read music interactions the initial positions of the means are the reverse of what is expected, although the difference between is only minor. When the means are compared at the point of termination the expected pattern of relationships is observed.

The decision to construct and administer the MBQ in conjunction with the SHRMT is justified as it indicates a significant relationship between certain aspects of a pupil's musical background and the music recognition task involved in the SHRMT.

PART FOUR

CONCLUSIONS

AN INTERPRETATION OF RESULTS FROM THE SECOND HEARING RECOGNITION OF MUSIC TEST.

The SHRMT demonstrated that recognition of music is a musical skill that can be performed by Form 1 and Form 2 pupils. In view of the importance that recognition has in music listening it is appropriate to plan to include practice in this skill in class lessons.

The various sub-tests of the SHRMT showed that certain features of music have qualities that are more easily recognised than others. The Shape sub-test demonstrated that shorter phrases could be recognised more easily than longer ones. Some of the distractors used, demonstrated that the particular range of notes presented by a phrase is a feature that is recognised during the initial phase of listening to a piece of music. Distractors going beyond the range were rejected more accurately than distractors whose alteration was within the range of notes originally established. Distractors whose alteration generally maintained the shape of the original piece, were more easily confused with the original than those distractors whose alterations involved wider interval distortion (above a fifth) or did not maintain the shape. This shows that the shape or outline of a piece makes some impression on an initial hearing.

Further work on the easier recognition of particular shape characteristics such as a wide evenly spaced rising figure (as in a succession of 3rds or 5ths) in contrast to a narrow evenly spaced rising figure (as in a scale) would be useful. The degree to which these were more or less memorable may well be culture dependent.

The results suggest that Intermediate age pupils can deal with atonal as well as tonal items. This supports the principle of the inclusion in the curriculum of modern atonal works as well as more traditional music.

Like the Shape results the Rhythm results show that short items were more accurately recognised. Changes in position of alteration within the items, that is to say at the beginning, the middle or the end, did not produce consistent results (like the Shape sub-test). The types of alterations performed did suggest that certain rhythmic features were more noticeable than others but the scope of the test was too limited for

specific suggestions to be made, except to point out that the results showed compound time items were chosen more accurately than those in simple time. Further work on this could well be a profitable line of research. In this test it was demonstrated that rhythm can be recognised in a chordal presentation as easily as in a single line presentation. Other tests have offered only single line presentations. This chordal apprehension of rhythm is more related to pupils' everyday experience of music than the single line presentation, although any personal singing experiences which they have are obviously single line ones.

The Texture sub-test results again showed that the short items were more accurately recognised. Items with fewer parts, for example, two parts were more easily recognised than items that began with three or four. The response to distractors used in this sub-test demonstrated that pupils were not very experienced in listening to parts below the melody line. Obviously neither harmonic changes nor a change to or from a more flowing bass line (because of passing notes), nor a change in direction of the bass line from low to high or vice versa was noticeable enough to aid in the recognition task. This is not really surprising as the ability to follow lower or inner lines is still being practised by people who have consciously practised listening skills.

The Timbre sub-test demonstrated that because some sounds were apparently more noticeable than others, pupils were consistently more able to choose or reject them more accurately. This was shown where the sound produced by a family of instruments (that is a group of instruments either string or woodwind) was offered as a distractor against a mixed instrument original. This ability to distinguish between pure or mixed family instrumental groups was also shown in the results which compared performance on items presented by a family of instruments with those involving a mixed group. As in the Texture sub-test the results showed that many pupils were not experienced in listening to parts below the melody line. Alterations to instruments in the bass part were less difficult to notice than alterations to the inner instruments. The difficulty with middle parts was consistent with the expected behaviour.

In the Timbre sub-test the long items were answered correctly more often indicating that the scanning strategy employed was now such that the length was of positive rather than negative significance in decision making. It was theorised that a vertical scanning strategy was being used in this sub-test in contrast to the horizontal scanning strategy that was necessary

in the other sub-tests. The texture sub-test also requires some vertical scanning.

The background research material on memory would support the idea that practice in recognising particular features (such as those suggested in the SHRMT sub-tests) would enable listeners to be able to make meaningful connections more rapidly and so deal with longer or more complex items.

As a means of collecting information about the mental procedures being used in a listening task (the SHRMT) the pupils were asked to answer questions on the reverse side of their test paper concerning their methods of choosing answers. (See Appendix B for the test papers and Appendix F for a summary of the results). A class discussion was also held to see if pupils could contribute any other information related to their answering procedure.

The answers to the questionnaire showed that between 33% and 40% of the pupils identified with the specific suggestions appropriate to each sub-test. For example in the Timbre sub-test the question was "Did you mainly recognise an instrument you are particularly familiar with and listen for groups using that instrument"? Between 36% and 44% of pupils in each sub-test considered they were "remembering" but were unable to describe any more fully how they did so. These two sets of figures taken together with those from the group who chose the "Have some other way? Please try to describe it . . . . ." response show that between 83% and 92% of the pupils considered they were approaching the task with some method, however unsuccessful their results subsequently showed that to be. This propensity to think in terms of a method, even if that method was inadequate, suggests that with training and practice better methods of performing such tasks could be substituted. It would thus not be a new idea to pupils to talk of having a method of working at such a task.

During the discussion after the testing, pupils reported distinct preferences for slow or fast items. (The account of this is given in Appendix F, p. 230). The interesting point is that they were able to give reasons for this choice. For the fast items they said they "heard it all in one piece" while for the slow they had time to "check up after each note". Research to examine listening strategies of both unsophisticated and sophisticated listeners should provide insights that could be used in training programmes. Not enough is known about the kinds of questions people ask themselves in attempting to perform these tasks. The difficulties that face listeners today demand that the best ways to develop (and improve) good listening habits be found. Discussions about,

and exercises in methods of tackling listening tasks, are useful approaches.

Another aspect raised was that most of the pupils were of the opinion that two of the distractors were reasonably easy to eliminate and that the final choice was made between the remaining two. Personal characteristics of hesitancy and confidence have some effect on the responses to such a task. Once again further investigation into the mechanisms could well suggest approaches in teaching which would build up confidence in decision making. This would allow faster mental processing and thus enable a greater amount of music to be processed. Such an approach may appear to deny the "otherness" of music but it is demonstrable that in all our listening to music in fact we follow patterns of processing which are effective to a greater or lesser extent. The question of the amount of time needed for processing music would obviously vary between sophisticated and unsophisticated listeners. The amount of time available for processing involves both the time between items and also the time within the music.

Another useful line of research in connection with the time involved in processing is whether there is time between significant thematic and less important bridging material for mental processing to occur. The continued popularity of some of the Mozart and Beethoven music, for example, may be due in part to the timing between thematic ideas and their repetition. Because the time between the presentation of the ideas is sufficient for processing and the repetitions frequent enough, listeners will have a feeling of satisfaction at being able to recognise some of the features. If this is the case then progressions of pieces - from all ages - with more or less concentrated demands on information processing could be presented, thus providing a chance for developing listening skills.

THE PERSPECTIVE PROVIDED BY THE MUSICAL BACKGROUND QUESTIONNAIRE

The Musical Background Questionnaire provided information concerning the musical background and experience of the pupils. The data revealed that there was a wide range of experience and background within the sample. The multivariate analysis of variance of some of the data showed that when age was the main effect that the older pupils (in this case Form 2) had a significantly higher number of personal units reflecting more musical involvement than the younger pupils. The younger pupils were found to have greater aspirations to be involved in more music. When intelligence

was the main effect there was a highly significant result showing that the higher IQ pupils were personally involved in more music activities including reading music. More of the higher intelligence group were able to read music. A difference, not as great as the previous two, but nonetheless significant, was noted in the home backgrounds of the higher and lower intelligence groups. Once again the higher intelligence group had gained higher results. The analysis with sex as the main effect is quite clear-cut in each of the five variables, home, personal and aspiration units, the attending concerts and read music data, the result is a highly significant one favouring the girls. That this result is so clear cut is to some degree due to societal pressures.

This result prompted a closer look at the family musical involvement. 48% of all the pupils in the sample had no parental involvement in music. Under half of these pupils had siblings involved in music showing that 27% of the whole sample had no family involvement in music. More of the mothers (43%) were shown to be involved in music than the fathers (25%). This high female involvement might well be one of the reasons why the girls in general had higher results. The reasons for this imbalance are complex but are a reflection of societal attitudes and practice. A comparison of the family involvement of boys and girls who had music lessons revealed no significant differences. This same pattern was found with the boys and girls who played but did not learn, and those who did not learn or play. The significant differences came about because the numbers of boys in the "not play, not learn" group are higher than those for the girls and the number of girls in the "learn" group is higher than the boys.

When the data from the Musical Background Questionnaire was processed with the results of the Second Hearing Recognition of Music Test the analysis revealed that pupils who had more personal experience of music performed better than those with less music experience. Pupils with higher IQ scores did better as also did the girls. Pupils with higher home units and aspiration units did better but neither result reached significance. However, pupils who attended music concerts and those who read music were found to have scored significantly better than those who did not. The picture revealed by this suggests that pupils score better on a musical task when they come from an environment in which they have a personal involvement in music. The musical environment provided by their homes will obviously have been of importance in providing the opportunities for musical activities but it is their own personal involvement in its various aspects that is of the greatest importance.

The background research readings suggested that the chance to gain musical experience in the home is of vital importance as it is unfortunately possible to escape significant musical experiences at school.

Musical opportunities in all their diversity should be encouraged at home and school so that the satisfactions of music may be available to all.

THE WIDER PROBLEM OF CONTEMPORARY MUSIC AND THE PLACE OF THE COMPOSER

From the answers given by the New Zealand composers (See Appendix G) it is apparent that composers, (as a group of people), hold a variety of opinions about composing and about listeners. While there is agreement on certain points, others reflect their differing experiences. Composers who through their own particular job or training had been involved with the performance of music either as instrumentalists or producers, seemed to be more aware of the needs of listeners and have adapted their works accordingly. Music written for special occasions appeared to involve greater consideration of the listeners than music written for its own sake. Composers who are more concerned with the development of a piece nevertheless believed that their piece would be able to be followed by a willing listener.

The amount assimilated on a first hearing of a piece would depend on the listener's own experience but composers hoped that listeners would gain at least some general impression of the piece and would be encouraged to hear it again to discover more about the music. Composers considered more of the piece would be heard if some preparatory help was given at the initial encounter.

Form in music was obviously of great importance to composers, whether from the point of view that the form was planned from the beginning of the piece or whether it was seen as emerging from the development of the musical ideas. However, the approach of composers to the apprehension of form varied. Some considered that this apprehension of form was a developed listening skill and thus unlikely to be found in the average listener. Others recognised that listeners vary in their particular interests and so for some form will be of more interest and thus easier to hear. Some composers deliberately planned certain details including extra musical ideas so that the form could be more easily followed through, while yet other composers planned details which were there only for the composer's sake. As the music is heard more, further formal details will be apparent.

The point was made that because of the generally unsophisticated nature of modern audiences (no doubt due in part to the great variety of music written) subleties in form are not as appropriate as they were for example in the time of the Viennese composers.

Composers were agreed that there are many differences between sophisticated and unsophisticated listeners; but their thoughts concerning the strategies involved in listening varied, as did their thoughts concerning the amount that the listener could actually hear. Composers described vertical and horizontal scanning techniques and suggested that listening needs to be such that as well as being able to follow a part or parts through, some sampling of the other happenings should also occur at the same time. Thus as well as the detailed listening involved in following one part or one feature (for example instrumentation or form) the listener should notice the general contrasts of the piece such as complexity versus simplicity. The listening approach should be flexible. The total amount of sound which is processed depends on the concentration paid to a piece and also on the experience of the listener.

The amount and kind of help given in programme notes would depend on the particular situation. Composers differed in their views about who should write the notes. Some composers preferred to write the notes themselves but others considered that the composer's close association with a piece would produce programme notes that would confuse rather than help, as the composer's view of his/her piece is different from that of the listener. Several composers suggested that a visual diagram, providing details about the piece, could be very useful. One composer suggested that ideally a piece of music should be introduced by someone with developed communication skills who was also close to the composer.

Composers were agreed that there were problems for listeners with contemporary music. They were aware that a significant part of the difficulty was that people had not heard enough contemporary music and that some of the sounds, for example electronic, might be quite foreign to them. At times the difficulty arose because of poor attitudes towards the music as when the listeners are not prepared to "give the music a chance". At other times the difficulty is due to the strangeness of the sounds themselves. The composers were aware that a listener who is confronted with a contemporary piece may feel quite lost. Several suggestions were made by the composers about ways of improving listening. Composers felt that it was important to take time to become familiar with the musical language or idiom and that listeners had to be prepared to

make some effort. An open-minded approach which accepted the piece as it came meant that certain problems could be avoided, such as trying to hear things that were not there, for example, melody. Appropriate expectations of different pieces would help to discover relationships more quickly and prevent time wasting searches for the right mental classification to place it in. Ideally listeners would be prepared for anything and be ready to listen imaginatively.

After listening to a piece of music discussion concerning the concepts and so on would also help. One practical suggestion for becoming familiar with a new piece was that the first minute or so of the piece should be listened to several times over before listening to the whole piece. Another suggestion was that a particular feature should be listened for, such as a particular instrument, or that a task should be set such as graphing some detail in the piece. Listeners should decide what is the most important aspect of the piece and work out the relationships within the piece from there. If programme notes are available, particular musical events can be listened for and followed. For the classroom, practice in certain features such as the creation of particular forms, such as a rondo, would give experience that would help future recognition. Music experience in early life gives a basic grasp of the materials used in music and is thus of great benefit to listeners.

The composers saw that the listener's attitude was of prime importance in the experience of listening to new music.

Because of the very personal nature of composing today, many different kinds of music will be available. Knowledge of the composer's background and intentions could well be helpful in establishing ways of approaching a piece.

One composer suggested that the quickest way to find out about another composer's processes is to read about them, for it may take many listenings to hear aurally what the composer says he is doing. The composers emphasize the fact that people need to practise listening and work at finding landmarks they can identify with or parts that make connections for them. They should begin from some positive point about the music that they like and build up connections from there. No two people approach a piece with the same background so different approaches are important. The idea of an open-minded, willing and practising listener emerges clearly as being the model to be followed.

The composers had varying comments concerning the communicating that their music might do. The abstract nature of music without words, may allow the expression of the depths of human personality, while on the other hand words with music may allow a more direct manner of communicating. The evocation of a particular feeling will remind listeners of their own experiences associated with that feeling rather than that of the exact circumstances of the composer. The mysterious nature of communication was reflected in their comments.

In the latter half of the twentieth century listening to any unfamiliar music (especially contemporary music) presents peculiar problems. In an age in which there is a greater quantity of music available than ever before, people's listening ability is becoming atrophied by their frequent encounters with background music. In response to this flood of music created by the technological advances in radio, record and cassette many people have developed the practice of deliberately "not listening" as a means of self protection. This "not listening" practice has led to the growing awareness that listening is not an automatic activity but an art that needs encouragement and practice. Another complicating factor is that there often appears to be poor communication between contemporary composers and contemporary listeners. This is in part due to the difficulties experienced in listening to unfamiliar sounds and also to the multitude of musical styles. The examination of the gap between the contemporary composer and the contemporary listener reveals additional gaps including that between teenagers and other listeners. Sociological factors such as the relative affluence of teenagers together with the technological advances have helped the formation of a teenage sub-culture with a very limited listening repertoire.

In this study the ultimate goal of listening is defined as aesthetic enjoyment. However, a number of mental barriers stand in the way of achieving it. These have been identified and suggestions have been made as to how they may be overcome.

One part of the listening process, recognition, has been investigated through the SHRMT and the effect of the pupils' background on the listening task has been examined. A group of New Zealand composers were interviewed and their views on the relationship between listeners and composers collected. As composers constitute one of the most sophisticated groups of listeners within the community their comments are of particular value.

Insights about listening have emerged from each of these lines of enquiry and when taken together are seen to overlap and supplement each other. These lines of enquiry confirm the relationship between previous experiences and current performance in listening tasks. The researchers into the musical background of children are all agreed that early musical experience is very important for the acquisition of skills and attitudes. The information processing theorists point to the importance of the acquisition of a well stocked vocabulary of experiences so that processing may deal more quickly with more of the stimulus material presented. In musical terms this means a listener who has had previous listening experience so that musical features are identified and relationships noticed. Analysis of the SHRMT and MBQ results show that in general pupils with greater musical experience perform better in a music listening task. The composers point out that listening needs to be practised and that listeners need to have suitable attitudes if they are to gain the most from the music.

Despite all the problems involved, this multi disciplinary approach to listening has provided a more fruitful approach to the subject than would have resulted from approaching it only from the perspective of one discipline. The study of listening is as yet far from completed and further research and testing must be undertaken if more adequate listening strategies are to be developed.

All these lines of investigation point to the importance of assistance being provided for the listeners in their endeavours to extend their listening repertoires and overcome their unfamiliarity with twentieth century music. The means to provide this assistance lies in the hands of the musical educationalists and of those who control the mechanisation of sound. Educationalists need to promote an open-minded approach to all types of music and also to devise teaching aids which take up the findings of each new piece of research. Those responsible for the mechanisation of sound (in its various forms) should be helped to see that a philosophy which is directed towards the enrichment, refreshment and entertainment of people rather than to purely financial considerations, is in the best interests of themselves and of society as a whole.

Today we are rediscovering the importance of the listener and of the art of listening. Without continuing efforts to promote good attitudes, and to provide training and practice the listener will be unable to respond adequately to the rich variety of musical expression which contemporary composers can produce.

APPENDIX A

SCRIPT FOR SHRMT

This test is about listening to music and it is being given to you to try to find out how people listen to music. The test has four sections, each with twelve questions.

On the top of the first answer sheet you will find a place for your name, school or college and other details. Please fill these in now.

In each of the four sections of the test the procedure is the same. After a word of explanation, there will be two Practice Examples so that you may be sure you know what the test is about before you do the twelve Test Questions.

A piece of music, which we will call 'the original' will be played, followed by another four pieces of music which we will call 'the choices'. One of these four choices is the same as the original piece. If the first of the choices is the same as the original put a tick in the first box on the answer sheet; if the second is the same as the original put a tick in the second box; if the third is the same put a tick in the third box and if the fourth is the same as the original put a tick in the fourth box .

Now we will do the First Section. This first section is called the SHAPE SECTION because the outline or shape of the line of music is the important thing to listen for. In each question the length of the notes is the same but the pattern of high and low notes of three of the four choices is different from the original piece. Listen carefully to the original piece of music, and as the four choices are played decide which of them is the same as the original and put the tick in the right box.

Now here are the two Practice Examples. Listen carefully. Here is the original piece of music . . . . here is the first choice . . . . the 2nd choice . . . . the 3rd choice . . . . the 4th choice.. . . . Put the tick in the box of the choice that was the same as the original. The tick should be in the 3rd box.

Here is the second Practice Example. This one is longer than the first example. Here is the original . . . . here is the first . . . . the 2nd . . . . the 3rd . . . . and the 4th . . . . . The correct answer in this example was that the 4th choice was the same as the original and so the tick should be in the 4th box.

Now we will begin the twelve Test Questions - make sure that you begin at the 1st of the test questions. Here is the original . . . . Here is the 1st choice . . . . the 2nd . . . . the 3rd . . . . the 4th . . . . .

Question number 2. Here is the original . . . . the 1st choice . . . . the 2nd . . . . the 3rd . . . . the 4th . . . . .

Here is the 3rd question. Here is the original . . . . the 1st choice . . . . the 2nd . . . . the 3rd . . . . the 4th . . . . .

Questions 4 to 12 - as for Questions, 1, 2 and 3 above.

How did you decide which choice to tick? Please turn over the page and answer the questions on the back.

Thank you for helping with this test .

Here is the Second Section. Please put your name at the top of the sheet.

This section is called the RHYTHM SECTION because the length of the notes is the important thing to listen for. In each question the outline or shape of the piece will be the same, but the lengths of the notes will be different in some of the pieces. Listen carefully to the original piece of music, and then as the four choices are played, decide which of them is the same as the original and put the tick in the right box.

Here are the two Practice Examples. Here is the original piece of music . . . . here is the 1st choice . . . . the 2nd choice . . . . the 3rd choice . . . . the 4th choice. Put the tick in the box of the choice that was the same as the original piece. The tick should be in the box of the choice that was the same as the original piece. The tick should be in the 2nd box.

Now the 2nd Practice Example. This one is longer than the 1st example. Here is the original . . . . here is the 1st choice . . . . the 2nd . . . . the 3rd . . . . and the 4th. The correct answer in this example was that the 1st choice was the same as the original and so the tick should be in the 1st box.

Here are the 12 Test Questions - make sure that you begin at the 1st of the Test Questions. Here is the 1st question - here is the original . . . . the 1st choice . . . . the 2nd . . . . the 3rd . . . . the 4th . . . . .

Question number 2. Here is the original . . . . the 1st choice . . . . the 2nd . . . . the 3rd . . . . the 4th.

Here is the 3rd question - here is the original . . . . the 1st choice . . . . the 2nd . . . . the 3rd . . . . the 4th.

Questions 4 to 12 - as for Questions 1, 2 and 3.

This is the third section of the Listening Test. Please put your name at the top of the 3rd page. This section is called the TEXTURE SECTION because the number of parts and their patterns are the important things to listen for. In each question in this section the same tune is used, but different numbers of parts with different patterns go with it. Listen carefully to the original piece of music and then as the four choices are played decide which of them is the same as the original and put the tick in the right box.

Here are the two Practice Examples. Here is the original piece of music . . . . here is the 1st choice . . . . the 2nd choice . . . . the 3rd choice . . . . and the 4th choice. Put the tick in the box of the choice that was the same as the original piece. The tick should be in the 3rd box.

Now the 2nd Practice Example. This one is longer than the 1st example. Here is the original . . . . here is the 1st choice . . . . the 2nd . . . . the 3rd . . . . and the 4th. The correct answer in this example was that the 1st choice was the same as the original and so the tick should be in the 1st box.

Here are the 12 Test Questions - make sure that you begin at the 1st of the test questions. Here is the 1st question - here is the original . . . . the 1st choice . . . . the 2nd . . . . the 3rd . . . . the 4th.

Question number 2. Here is the original . . . . the 1st choice . . . . the 2nd . . . . the 3rd . . . . the 4th.

Here is the 3rd question. Here is the original . . . . the 1st choice . . . . the 2nd . . . . the 3rd . . . . the 4th.

Questions 4 to 12 - as for Questions, 1, 2 and 3.

How did you decide which choice to tick? Please turn over the page and answer the questions on the back.

Thank you for helping with this test.

Here is the fourth section. Please put your name at the top of the 4th page. This section is called the TIMBRE SECTION because it has to do with the sounds of different groups of instruments. The music played in each question is the same but different groups of instruments are used in three of these choices. Listen carefully to the original and then as the four choices are played, decide which of them is the same as the original and put the tick in the right box.

Here are the two Practice Examples. Here is the original piece of music - here is the 1st choice . . . . the 2nd choice . . . . the 3rd choice . . . . and the 4th choice. Put the tick in the box of the choice that was the same as the original piece. The tick should be in the 3rd box.

Now the 2nd Practice Example. This one is longer than the 1st example. Here is the original - here is the 1st choice . . . . the 2nd . . . . the 3rd . . . . and the 4th. The correct answer in this example was that the 4th choice was the same as the original and so the tick should be in the 4th box.

Here are the 12 Test Questions - make sure that you begin at the 1st of the test questions. Here is the 1st question - here is the original . . . . the 1st choice . . . . the 2nd . . . . the 3rd . . . . the 4th.

Question number 2. Here is the original - the 1st choice . . . . the 2nd . . . . the 3rd . . . . the 4th.

Here is the 3rd question - here is the original . . . . the 1st choice . . . . the 2nd . . . . the 3rd . . . . the 4th.

Questions 4 to 12 - as for Questions, 1, 2 and 3.

How did you decide which choice to tick? Please turn over the page and answer the questions on the back.

Thank you for helping with this test .

APPENDIX B

LISTENING TEST

NAME: _____ SCHOOL: _____

COLLEGE: _____

AGE: _____ Years _____ Months Form _____ Sex _____

Section _____

SECTION (A) SHAPE

Practice Examples:

	1	2	3	4
1	☐	☐	☐	☐
2	☐	☐	☐	☐

TEST QUESTIONS:

	1	2	3	4
1	☐	☐	☐	☐
2	☐	☐	☐	☐
3	☐	☐	☐	☐
4	☐	☐	☐	☐
5	☐	☐	☐	☐
6	☐	☐	☐	☐
7	☐	☐	☐	☐
8	☐	☐	☐	☐
9	☐	☐	☐	☐
10	☐	☐	☐	☐
11	☐	☐	☐	☐
12	☐	☐	☐	☐

QUESTIONS FOUND ON SHAPE ANSWER SHEET

PLEASE PUT A TICK IN THE CORRECT BOX

When you were deciding which choice was the original, did you mainly -

(a) "Feel" with your hands, for example, as in playing a piano? ☐

(b) Think of an outline, as in a drawing? ☐

(c) Remember without using any special method? ☐

(d) Guess? ☐

(e) Have some other way? Please try to describe it . . . . . .

. . . . . .

. . . . . .

LISTENING TEST

NAME: _____

SECTION (B) RHYTHM

Practice Examples:

	1	2	3	4
1	☐	☐	☐	☐
2	☐	☐	☐	☐

TEST QUESTIONS:

	1	2	3	4
1	☐	☐	☐	☐
2	☐	☐	☐	☐
3	☐	☐	☐	☐
4	☐	☐	☐	☐
5	☐	☐	☐	☐
6	☐	☐	☐	☐
7	☐	☐	☐	☐
8	☐	☐	☐	☐
9	☐	☐	☐	☐
10	☐	☐	☐	☐
11	☐	☐	☐	☐
12	☐	☐	☐	☐

QUESTIONS FOUND ON RHYTHM ANSWER SHEET

PLEASE PUT A TICK IN THE CORRECT BOX:

When you were deciding which choice was the original, did you mainly -

(a) Feel the rhythm in, for example, your hands? ☐

(b) Remember special rhythmic patterns? e.g. triplets? ☐

(c) Remember without using a special method? ☐

(d) Guess? ☐

(e) Have some other way? Please try to describe it . . . . . .

. . . . . .

. . . . . .

. . . . . .

NAME: _____

SECTION (C) TEXTURE

Practice Examples:

	1	2	3	4
1	☐	☐	☐	☐
2	☐	☐	☐	☐

TEST QUESTIONS:

	1	2	3	4
1	☐	☐	☐	☐
2	☐	☐	☐	☐
3	☐	☐	☐	☐
4	☐	☐	☐	☐
5	☐	☐	☐	☐
6	☐	☐	☐	☐
7	☐	☐	☐	☐
8	☐	☐	☐	☐
9	☐	☐	☐	☐
10	☐	☐	☐	☐
11	☐	☐	☐	☐
12	☐	☐	☐	☐

QUESTIONS FOUND ON TEXTURE ANSWER SHEET

PLEASE PUT A TICK IN THE CORRECT BOX:

When you were deciding which choice was the original, did you mainly -

(a) Feel the different accompanying parts with your hands, for example, as in playing a piano? ☐

(b) Count the number of accompanying parts? ☐

(c) Think of the different harmonies? ☐

(d) Remember without using a special method? ☐

(e) Guess? ☐

(f) Have some other way? Please try to describe it . . . . . .

. . . . . .

. . . . . .

. . . . . .

LISTENING TEST

NAME: _____

SECTION (D) TIMBRE

Practice Examples:

	1	2	3	4
1	☐	☐	☐	☐
2	☐	☐	☐	☐

TEST QUESTIONS:

	1	2	3	4
1	☐	☐	☐	☐
2	☐	☐	☐	☐
3	☐	☐	☐	☐
4	☐	☐	☐	☐
5	☐	☐	☐	☐
6	☐	☐	☐	☐
7	☐	☐	☐	☐
8	☐	☐	☐	☐
9	☐	☐	☐	☐
10	☐	☐	☐	☐
11	☐	☐	☐	☐
12	☐	☐	☐	☐

QUESTIONS FOUND ON TIMBRE ANSWER SHEET

PLEASE PUT A TICK IN THE CORRECT BOX:

When you were deciding which choice was the original, did you mainly -

(a) Recognise an instrument you are particularly familiar with and listen for groups using that instrument? ☐

(b) Remember without using a special method? ☐

(c) Guess? ☐

(d) Have some other way? Please try to describe it . . . . . .

. . . . . .

. . . . . .

. . . . . .

MUSICAL BACKGROUND

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
PERSONAL DETAILS	Singing Lessons (not school)	GRADE OF LAST EXAM. Practical	Theory	Singing Group	Father Sing	Mother Sing	Best Singer	Brothers Sisters Sing
NAME . . . . . (SURNAME) SCHOOL . . . . . CLASS								
(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
NAMES OF INSTRUMENTS	Lessons	GRADE OF LAST EXAM. Practical	Theory	Music Group	Father can Play	Mother can Play	Best Player	Brothers Sisters Play

19. Do you play records or cassetts at home? YES/NO

20. About how many records or cassetts does your family own? _____

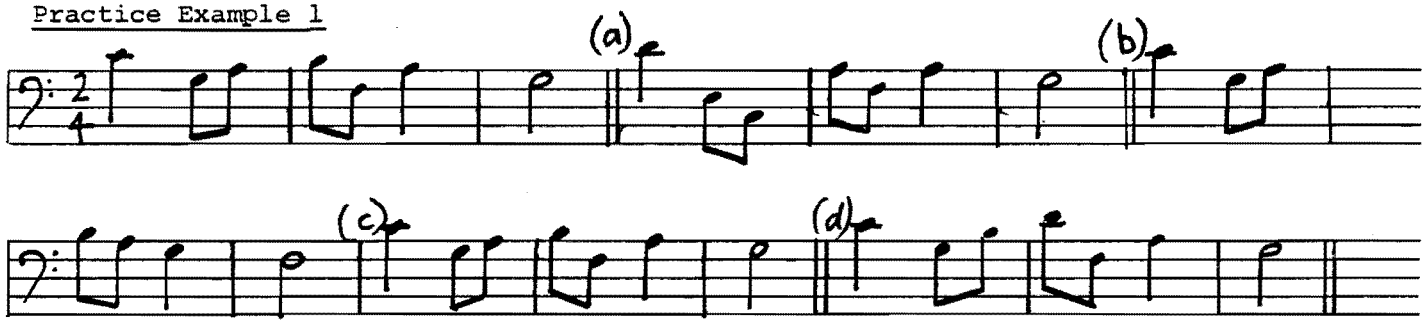
21. Do you go to concerts? YES/NO

22. Would you like to learn another instrument? YES/NO

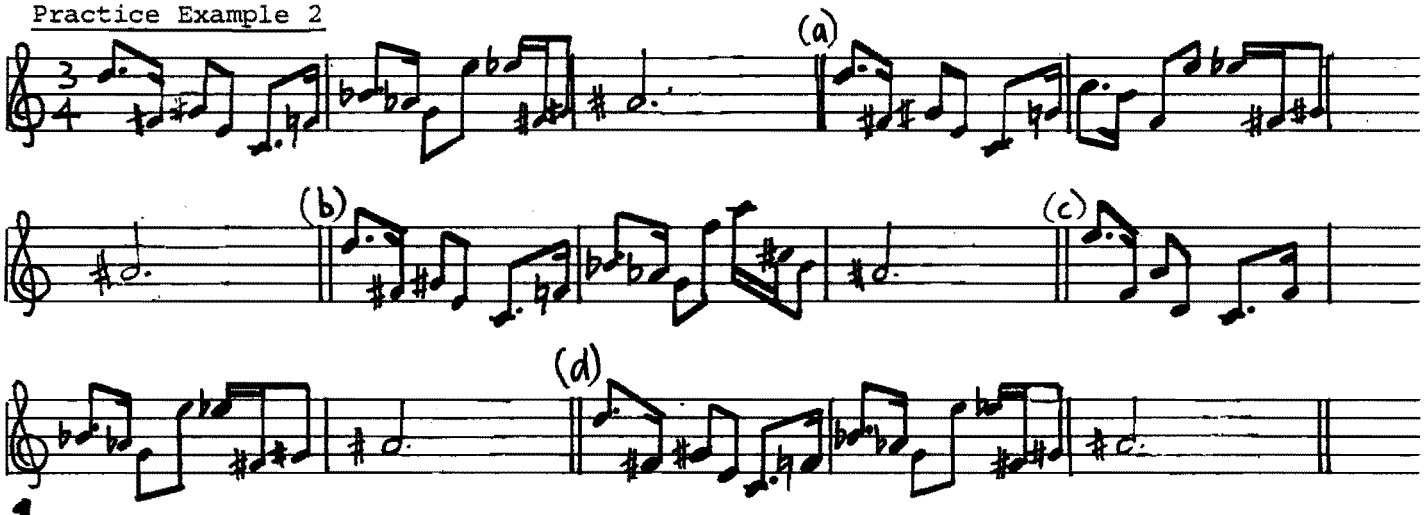
23. Can you read music? YES/NO

24. Would you like to learn singing? YES/NO

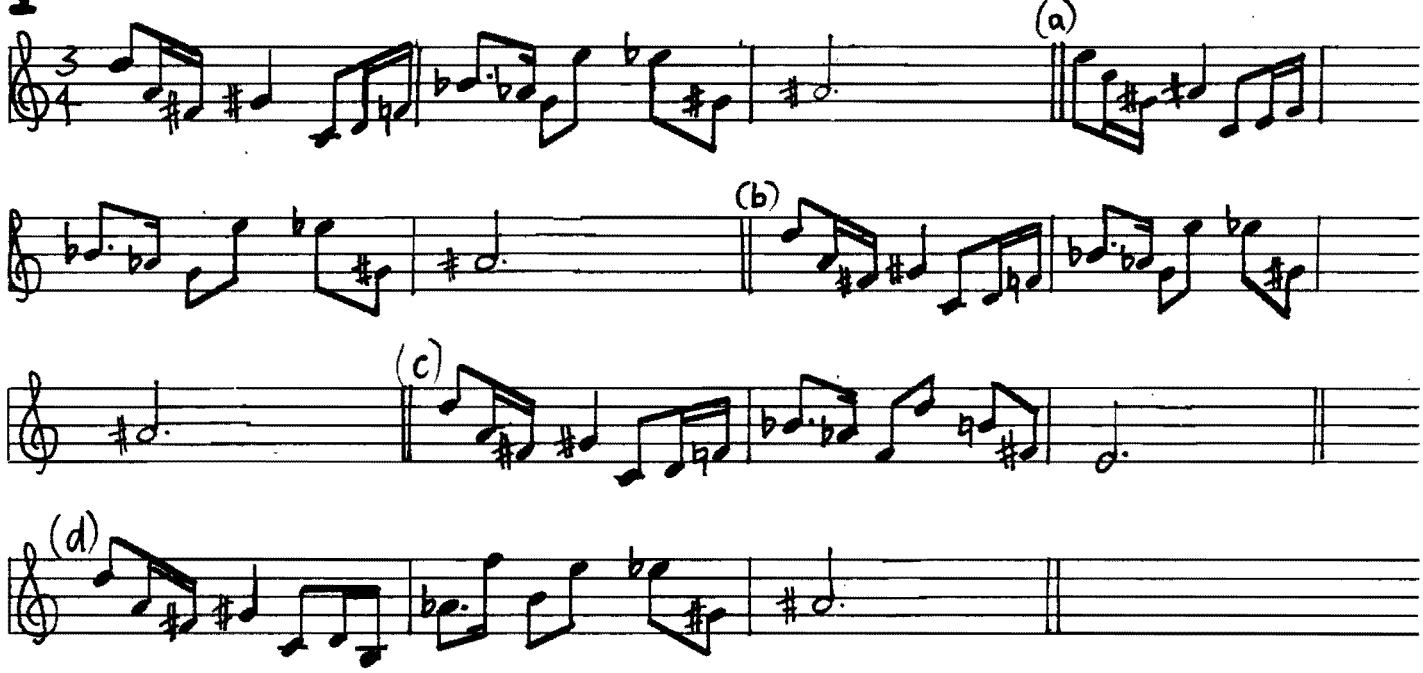
Practice Example 1



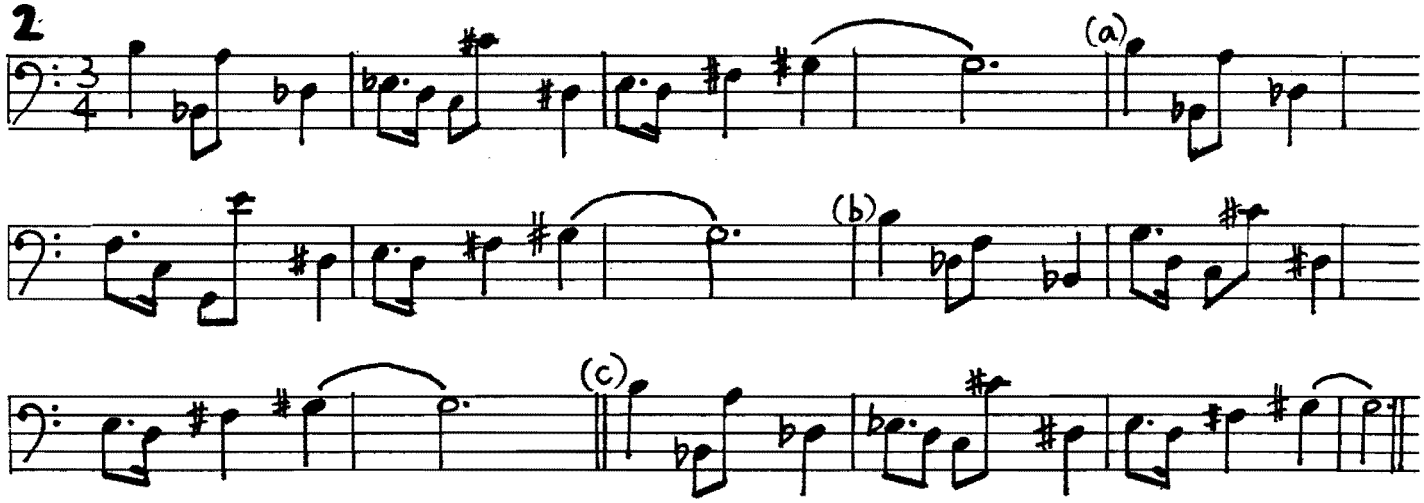
Practice Example 2

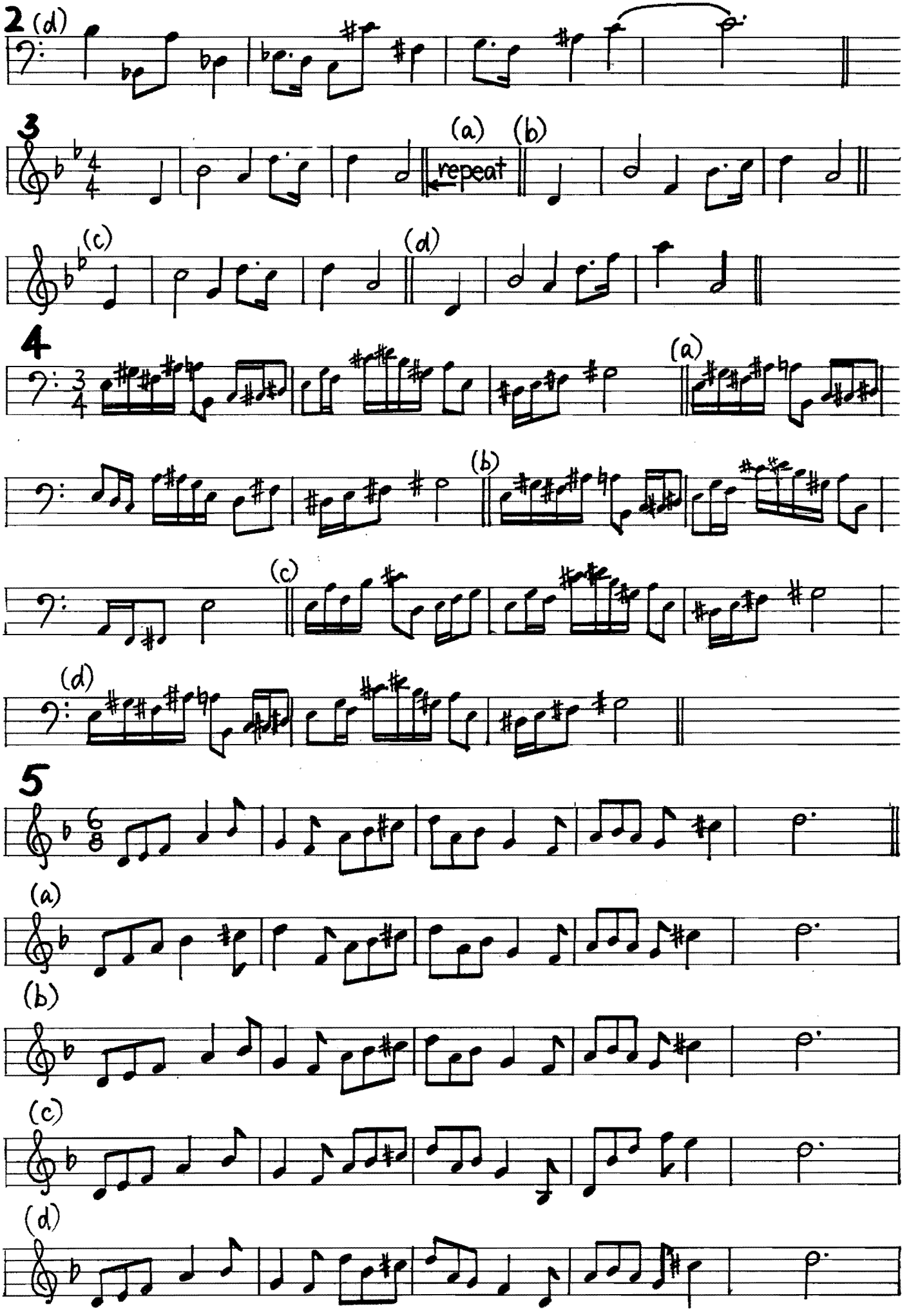


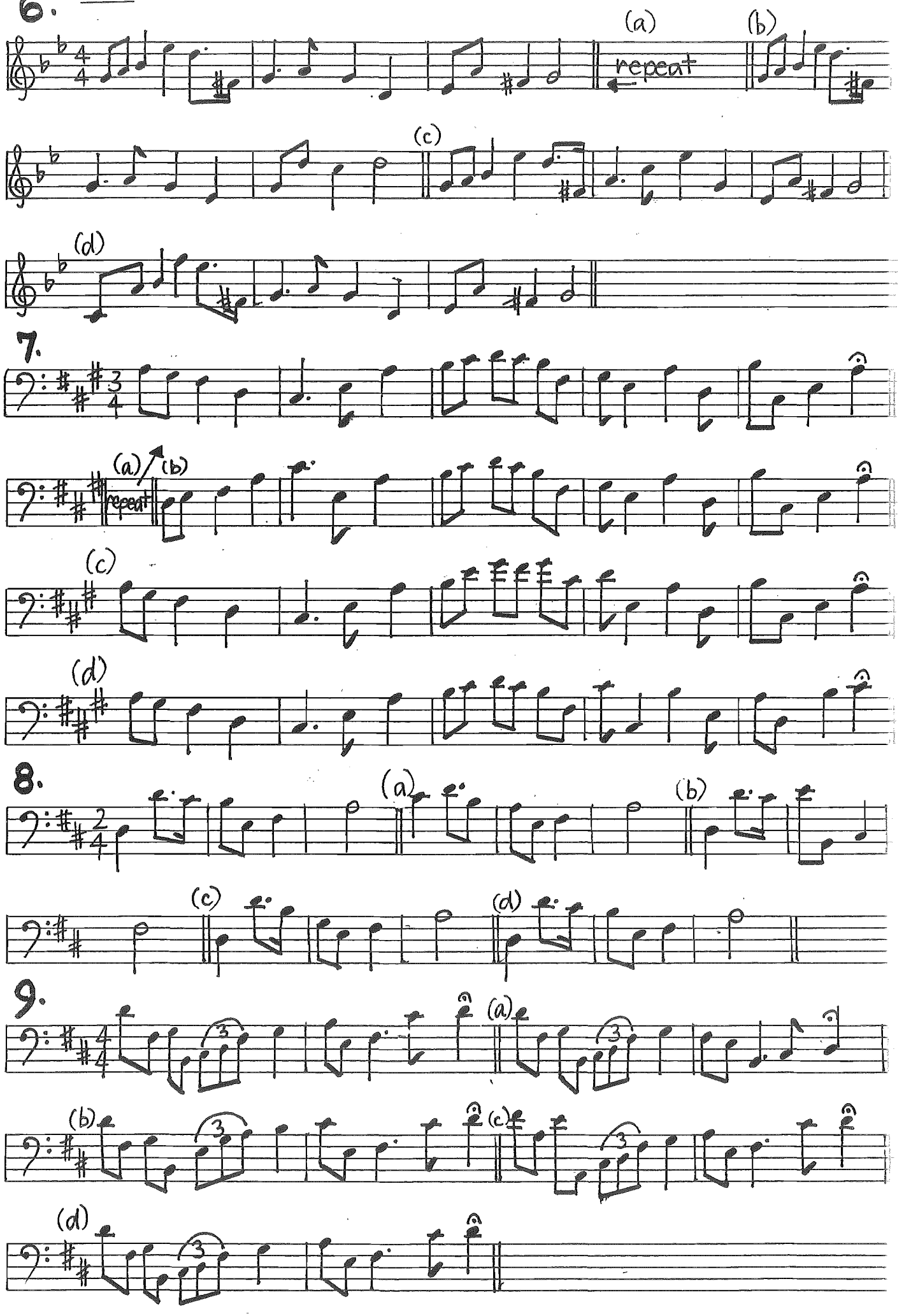
1

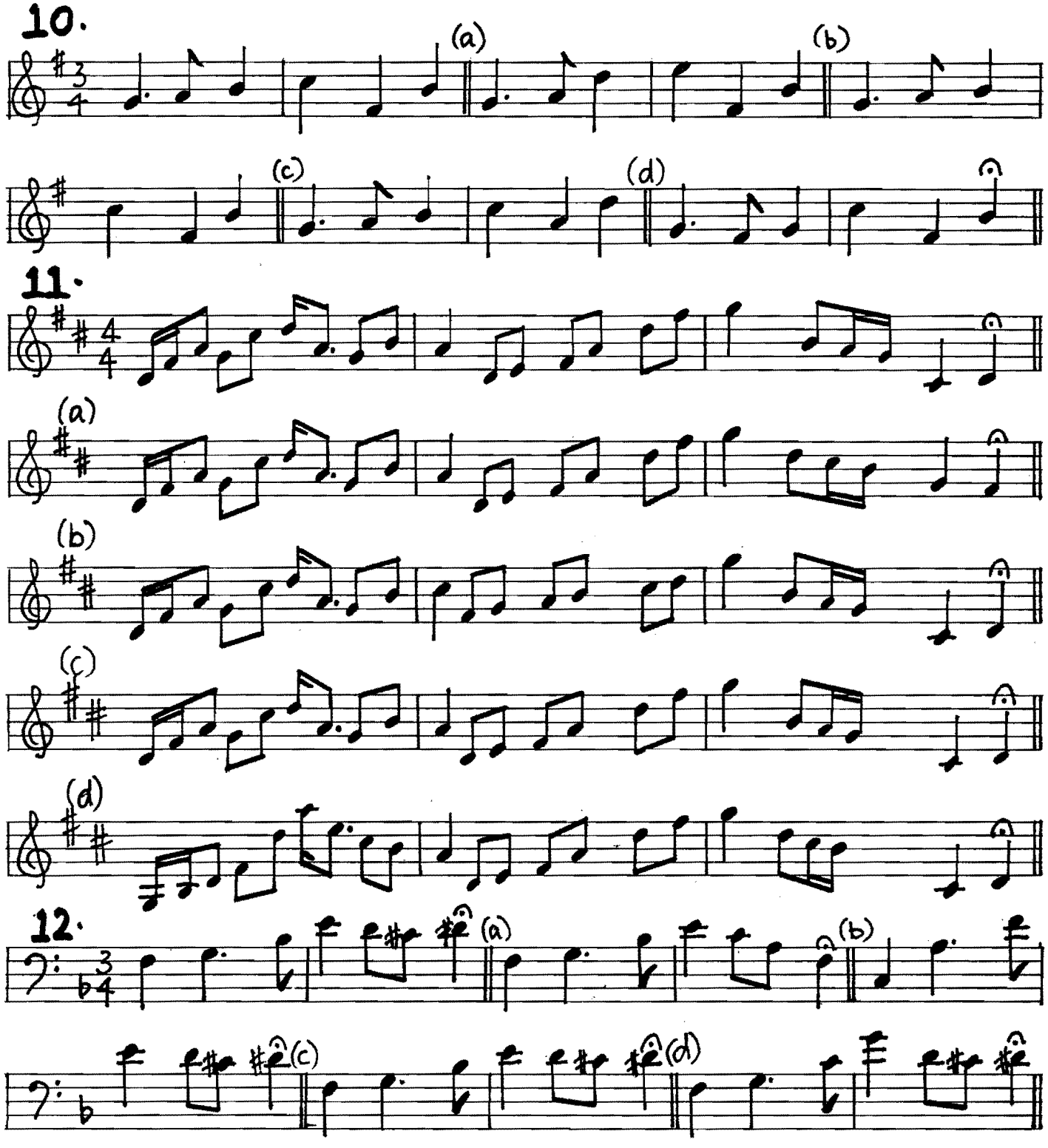


2

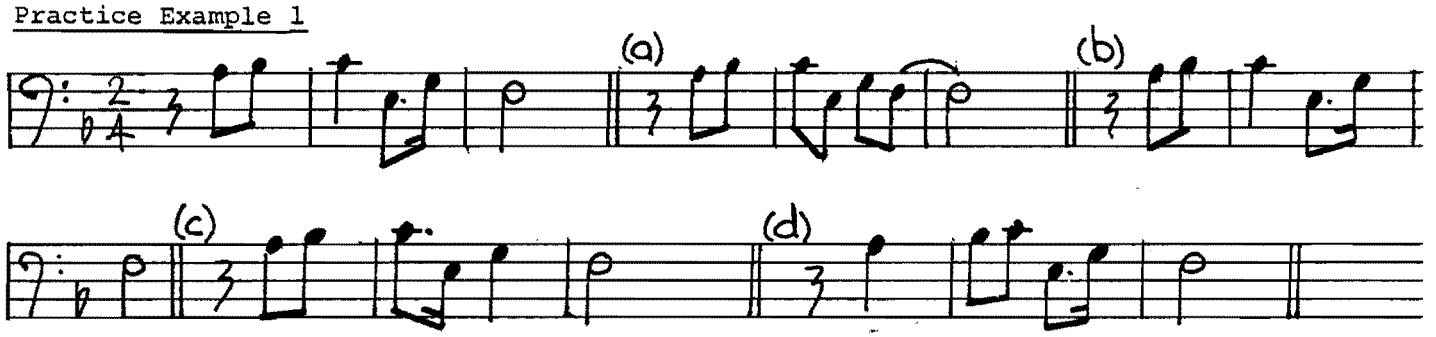



2
(d)
3
(a)
(b)
repeat
(c)
(d)
4
(a)
(b)
(c)
(d)
5
(a)
(b)
(c)
(d)

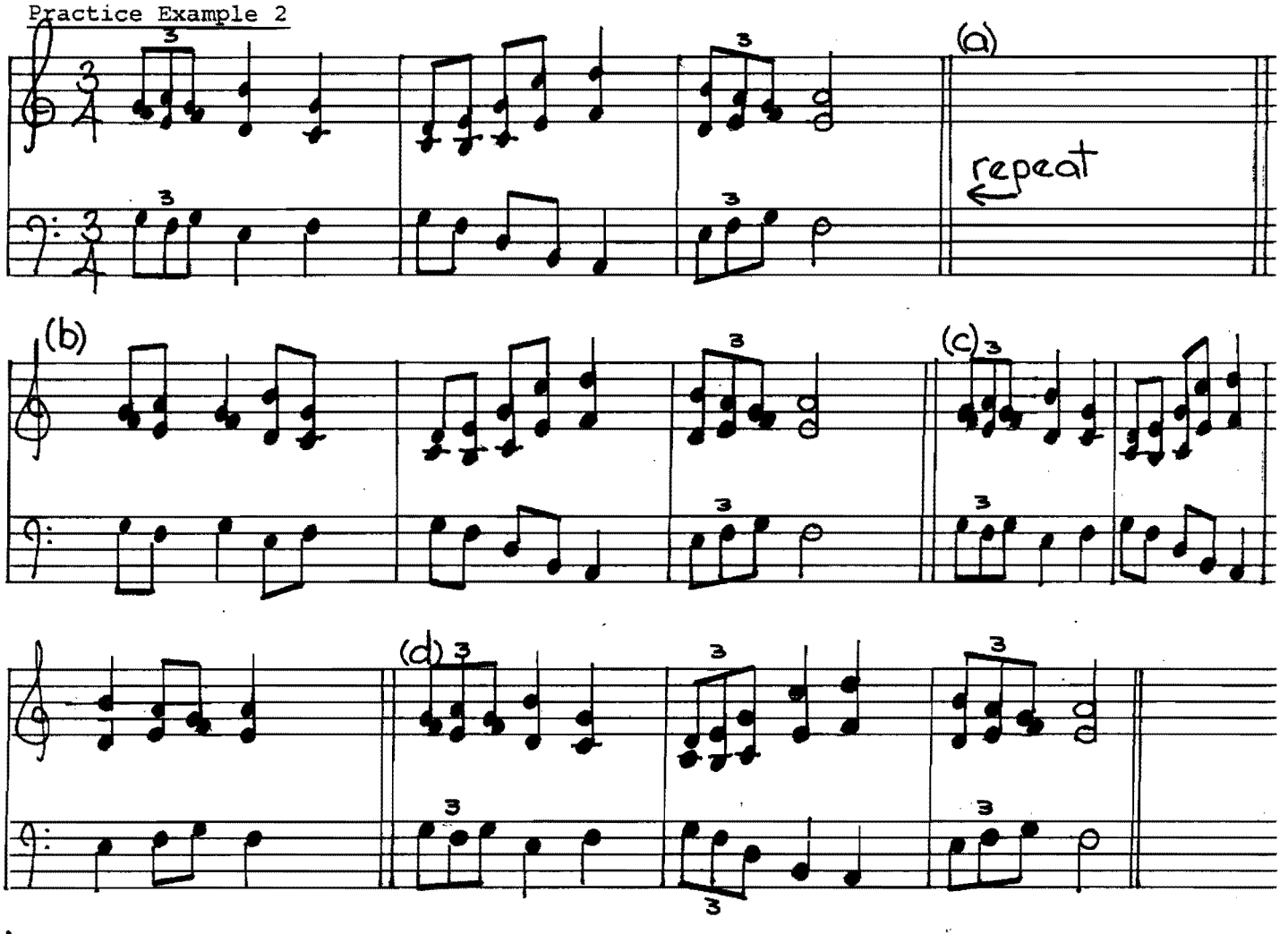

6.
(a)
(b)
repeat
(c)
(d)
7.
(a)
(b)
repeat
(c)
(d)
8.
(a)
(b)
(c)
(d)
9.
(a)
(b)
(c)
(d)

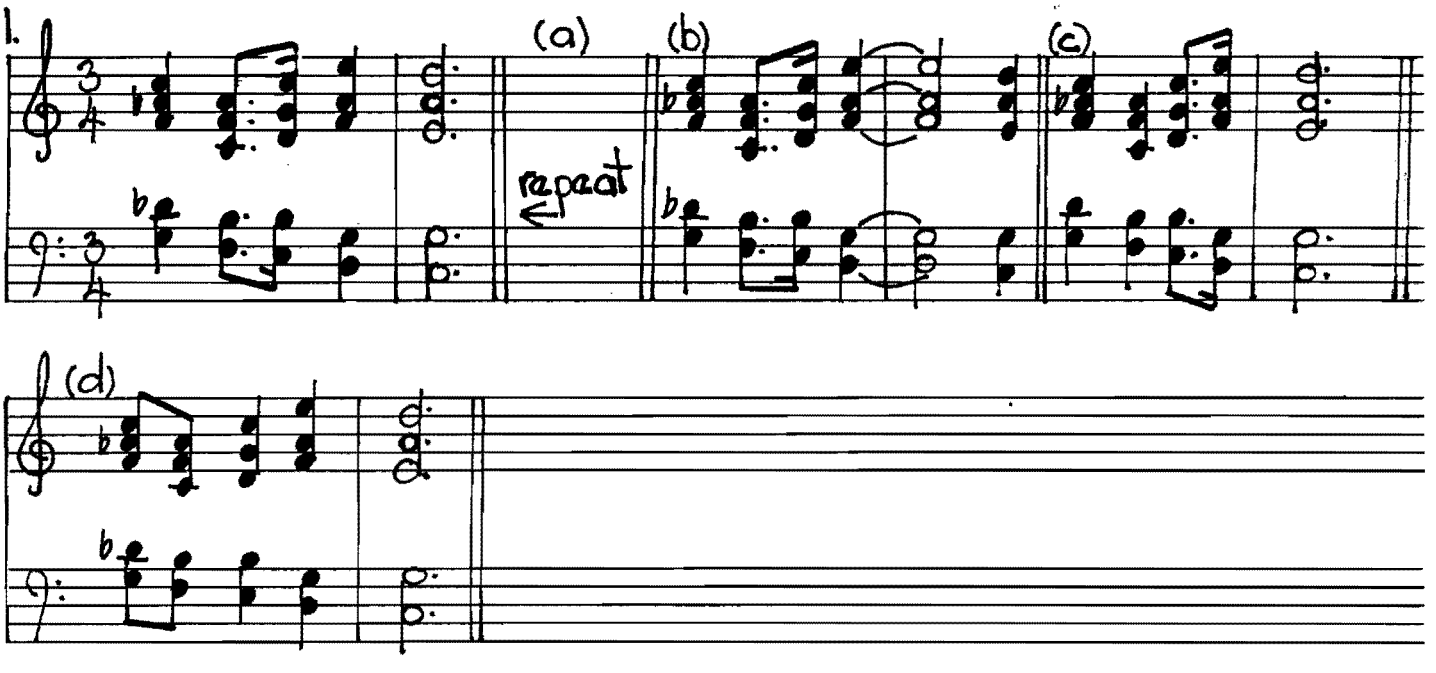

10.
(a)
(b)
(c)
(d)
11.
(a)
(b)
(c)
(d)
12.
(a)
(b)
(c)
(d)

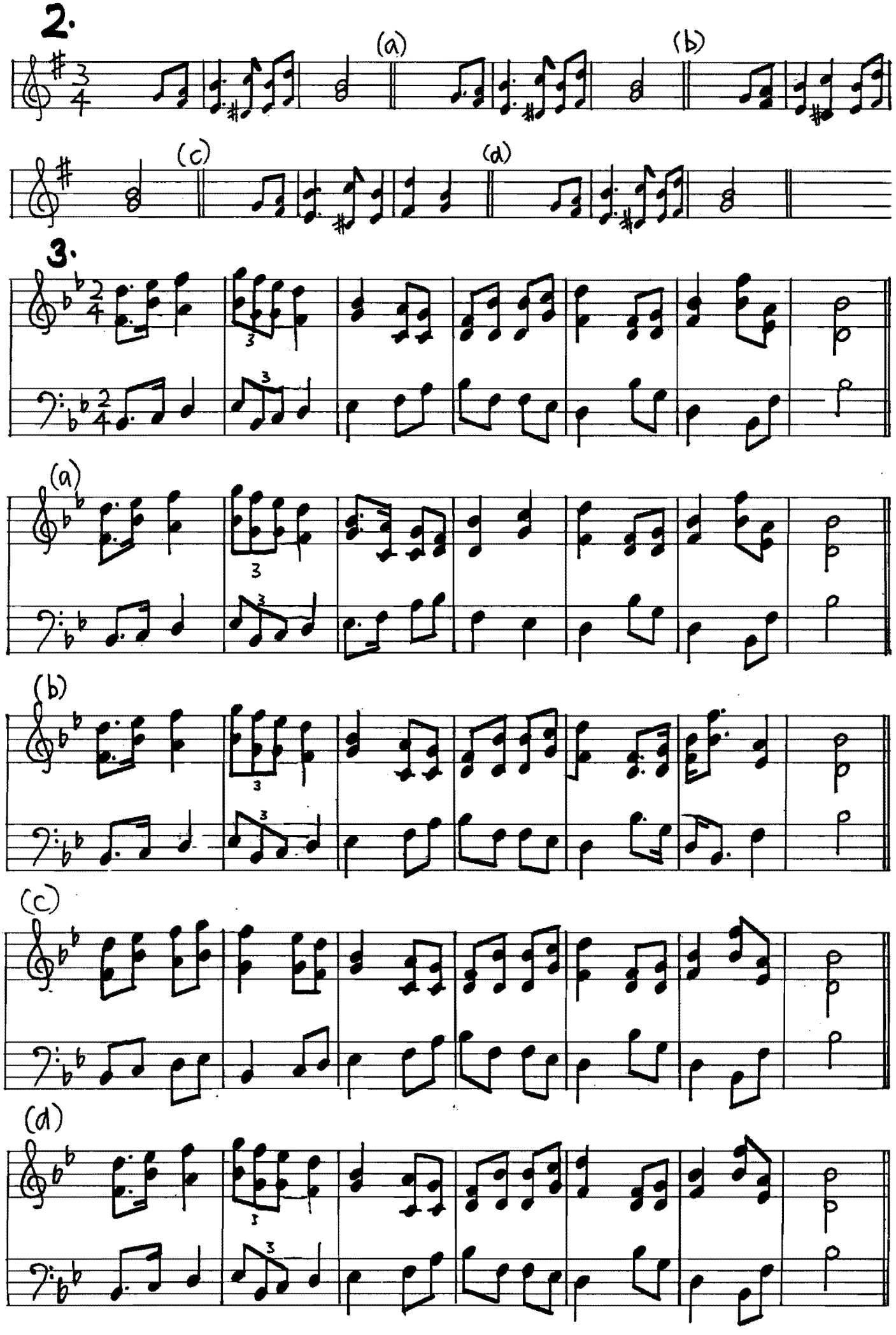
Practice Example 1

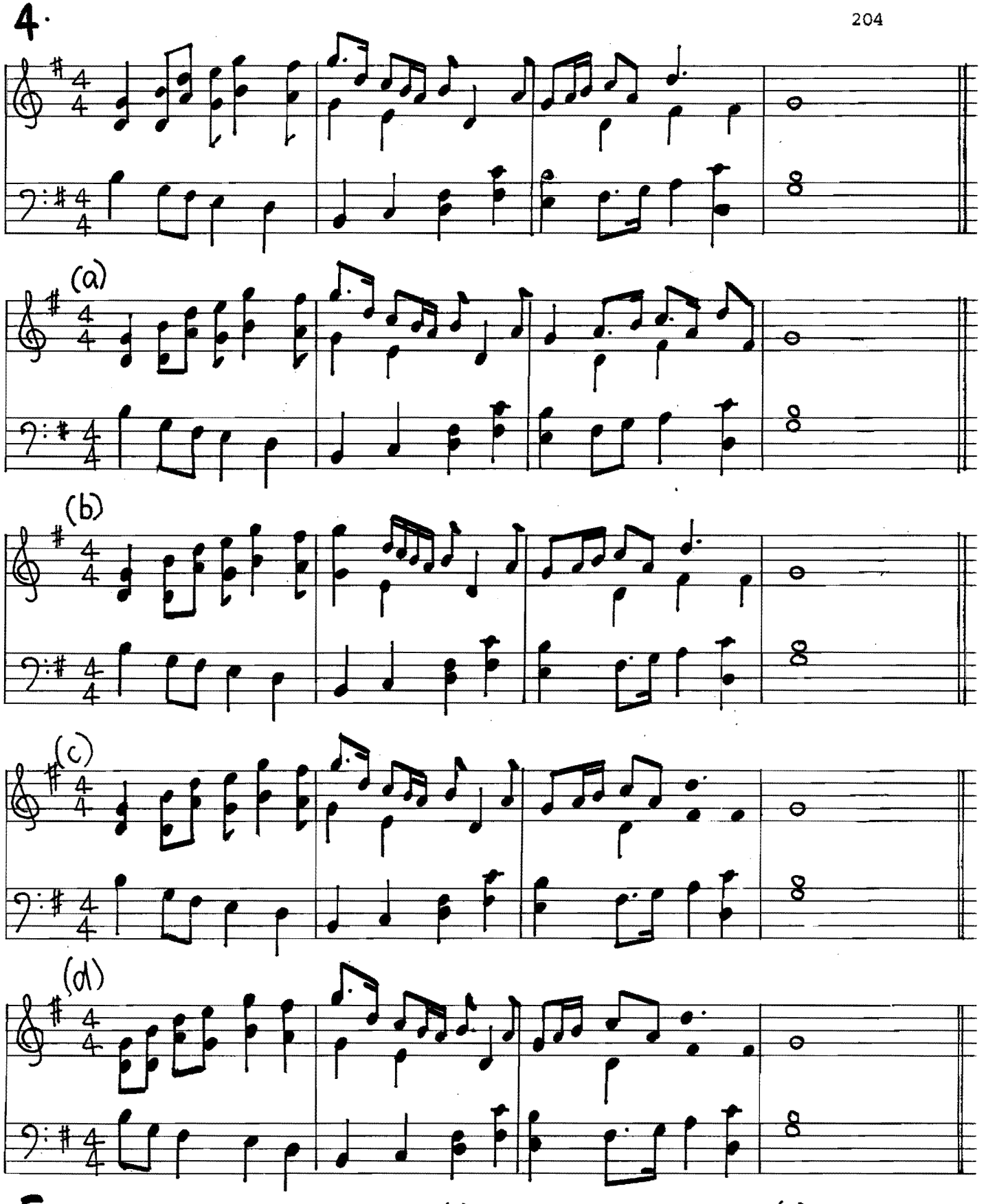


Practice Example 2

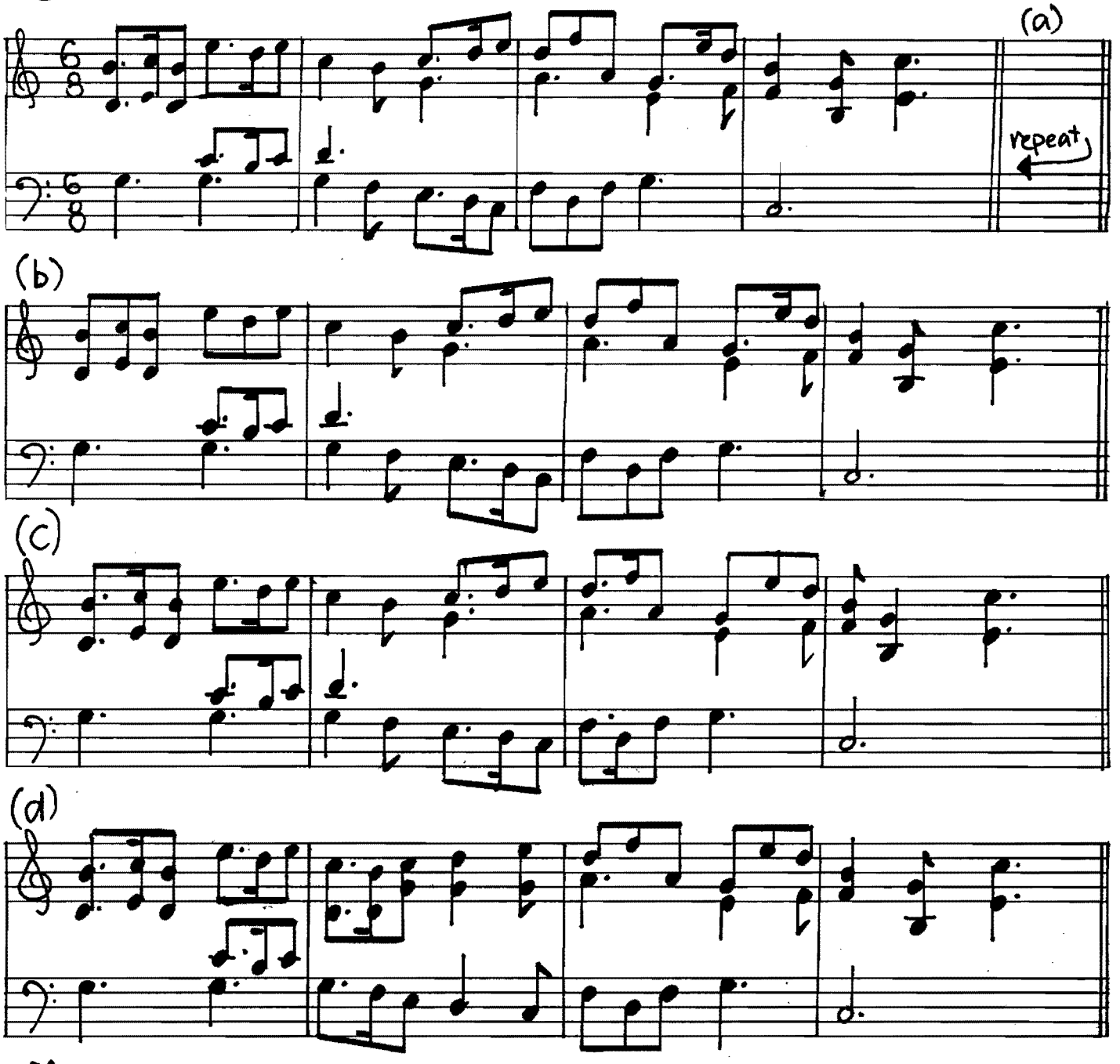




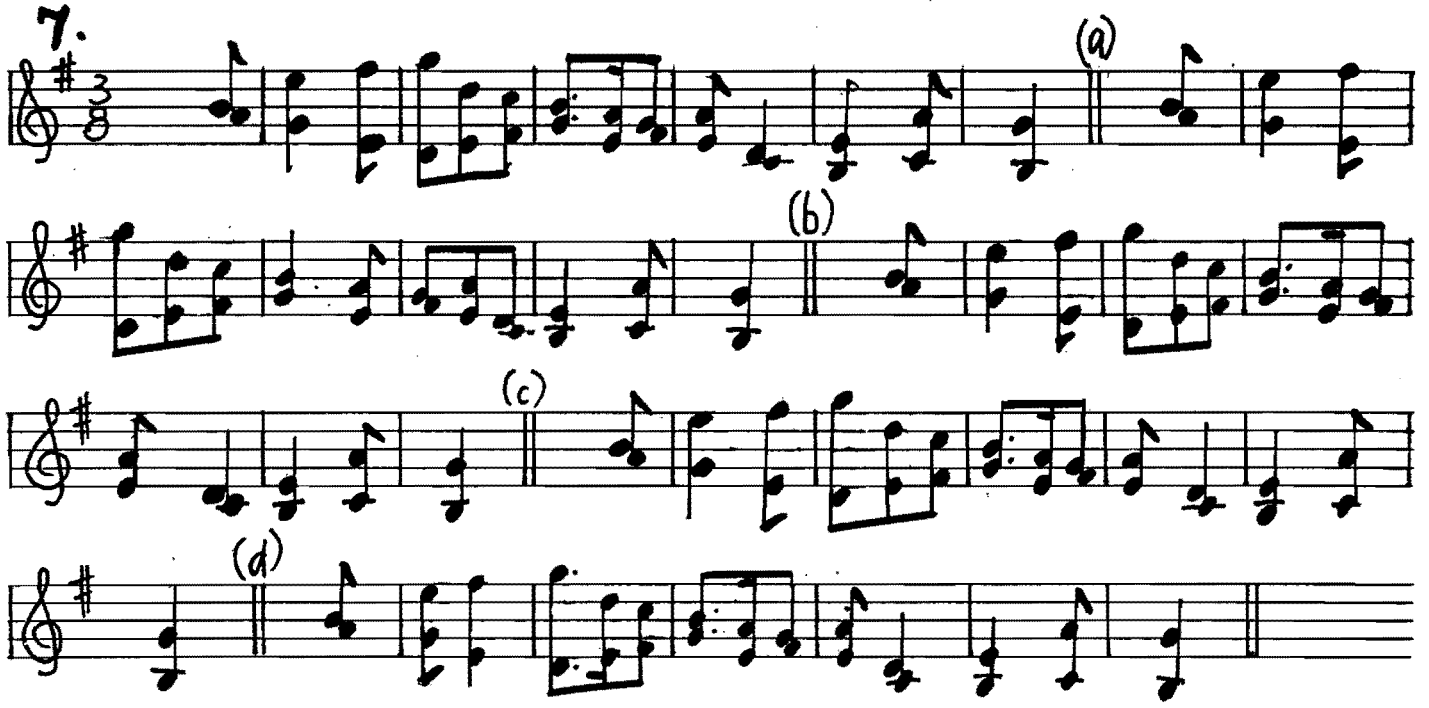

2.
(a)
(b)
(c)
(d)
3.
(a)
(b)
(c)
(d)

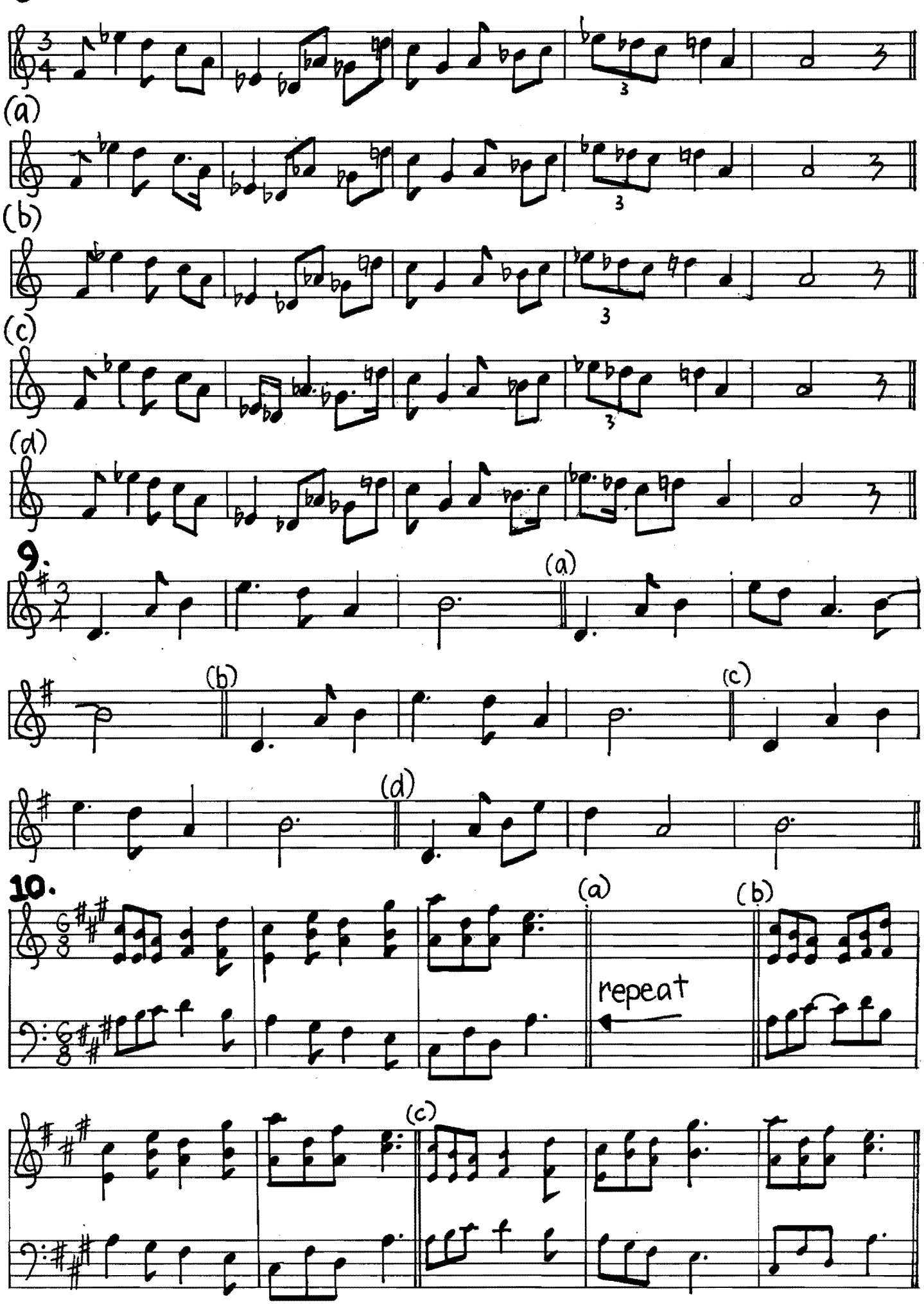

4.
(a)
(b)
(c)
(d)
5.
(a)
(b)
(c)
(d)

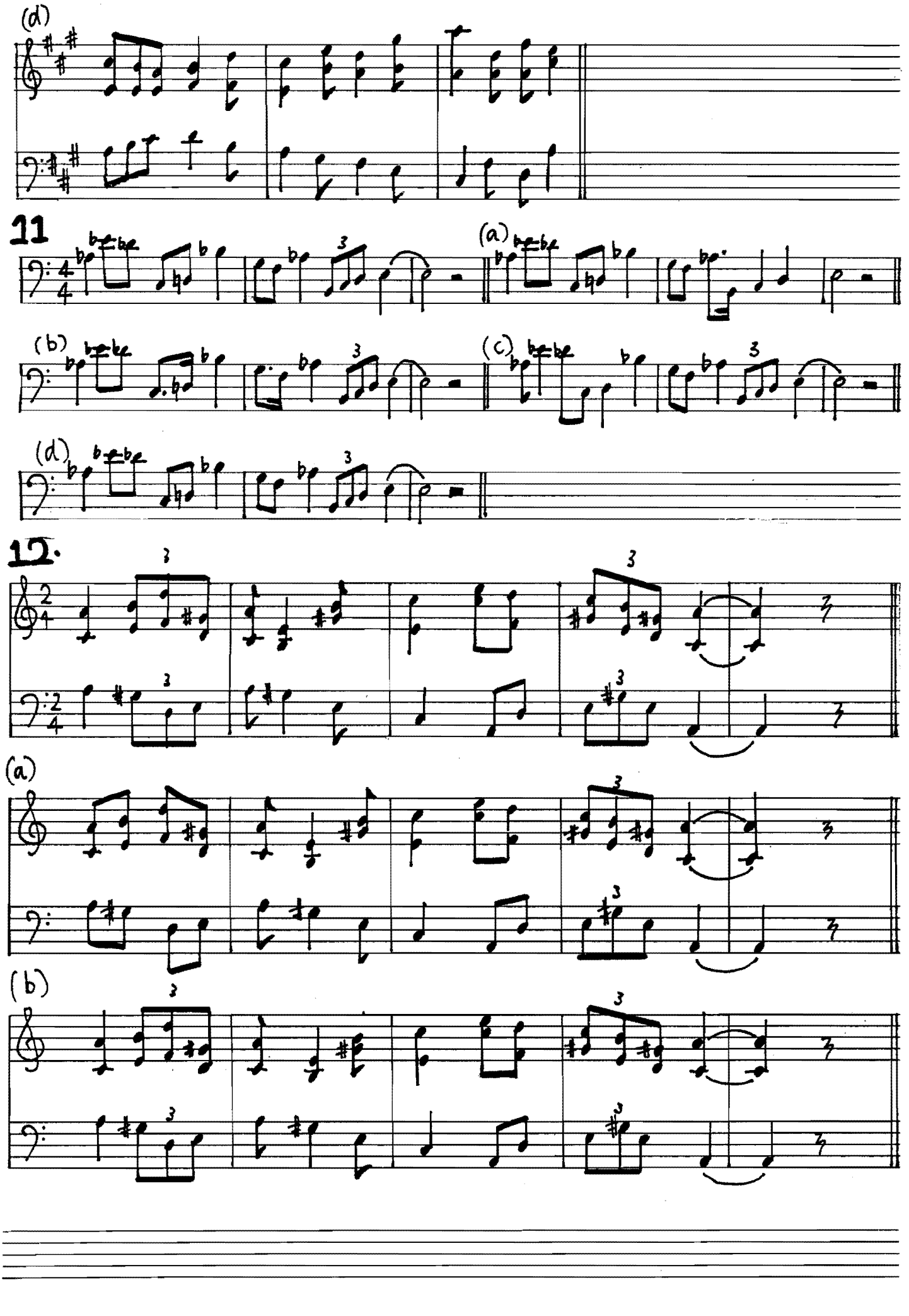
6.



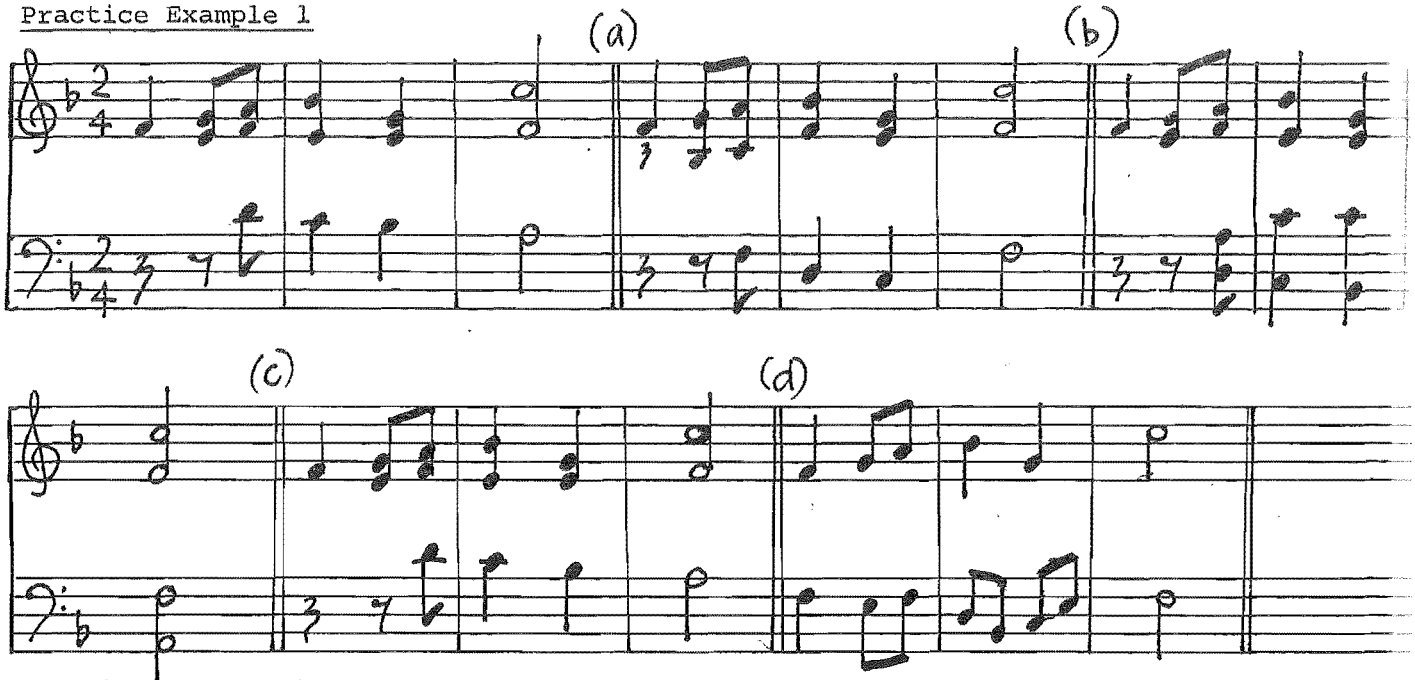
7.



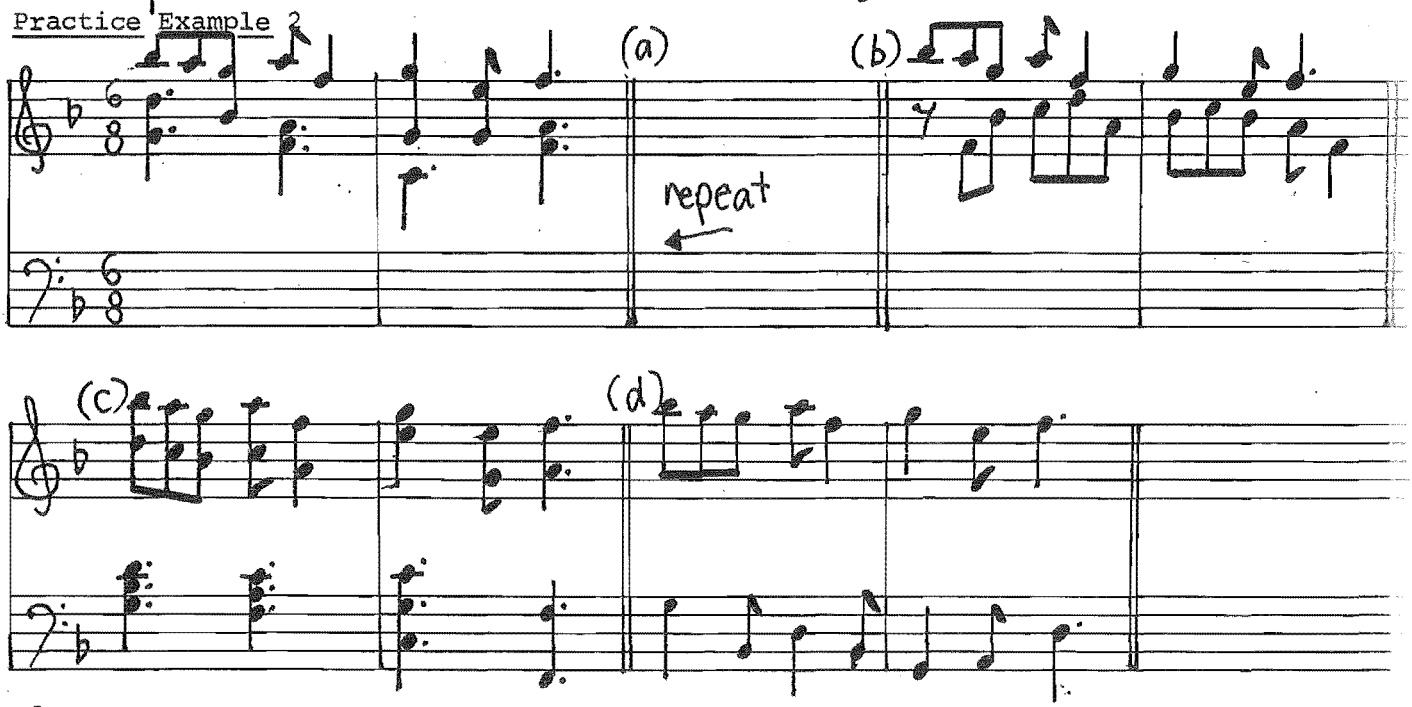

8.
(a)
(b)
(c)
(d)
9.
(a)
(b)
(c)
(d)
10.
(a)
(b)
repeat
(c)

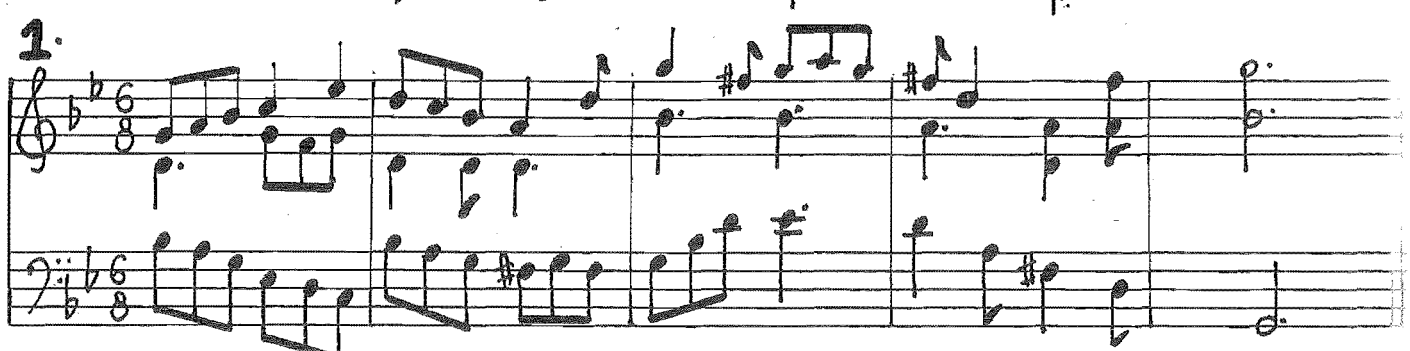

(d)
11
(a)
(b)
(c)
(d)
12.
(a)
(b)

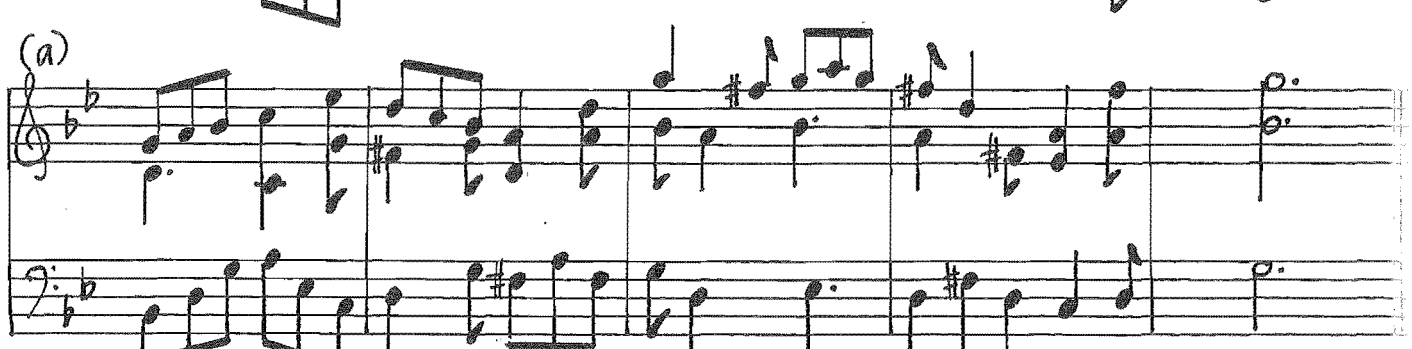
Practice Example 1

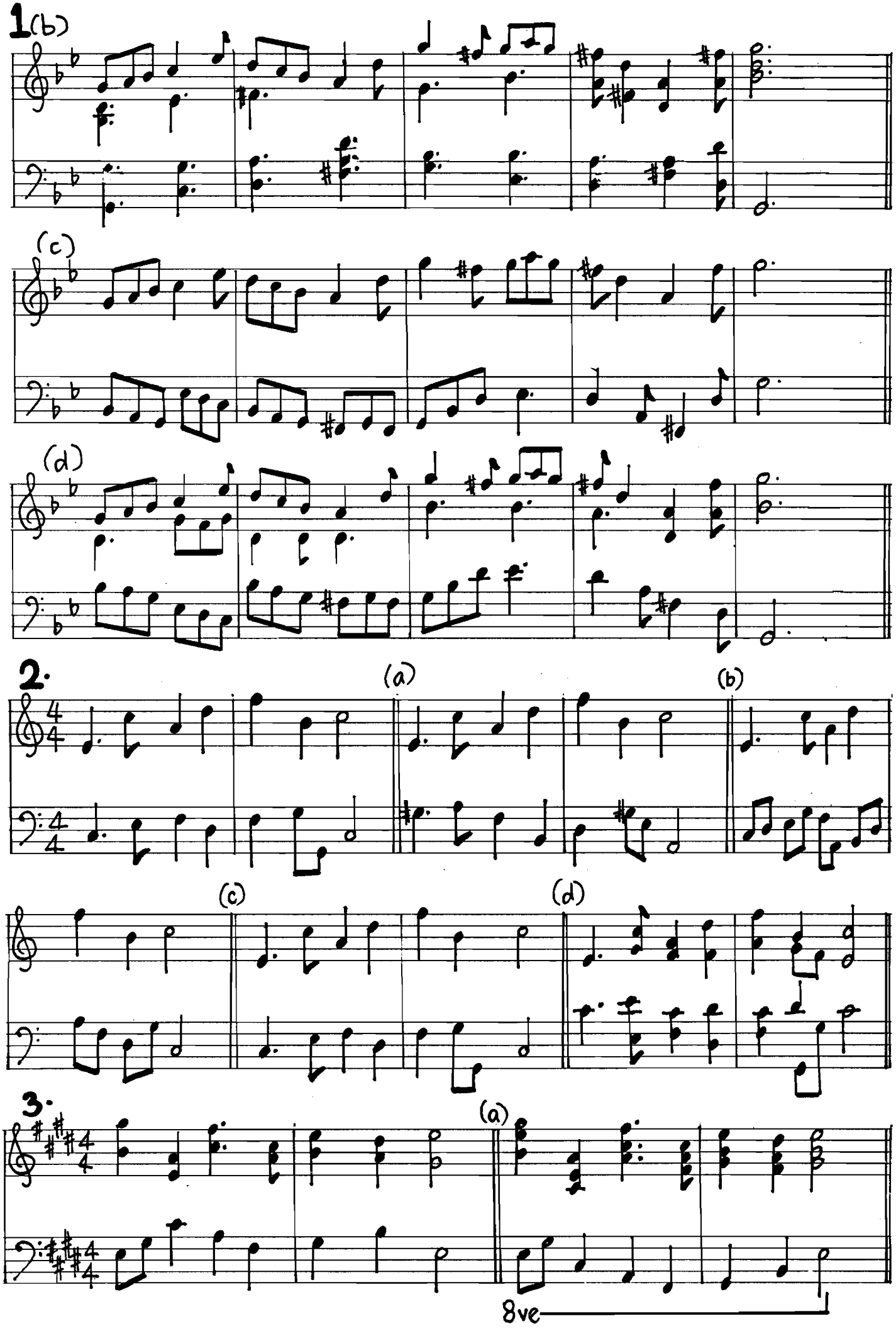


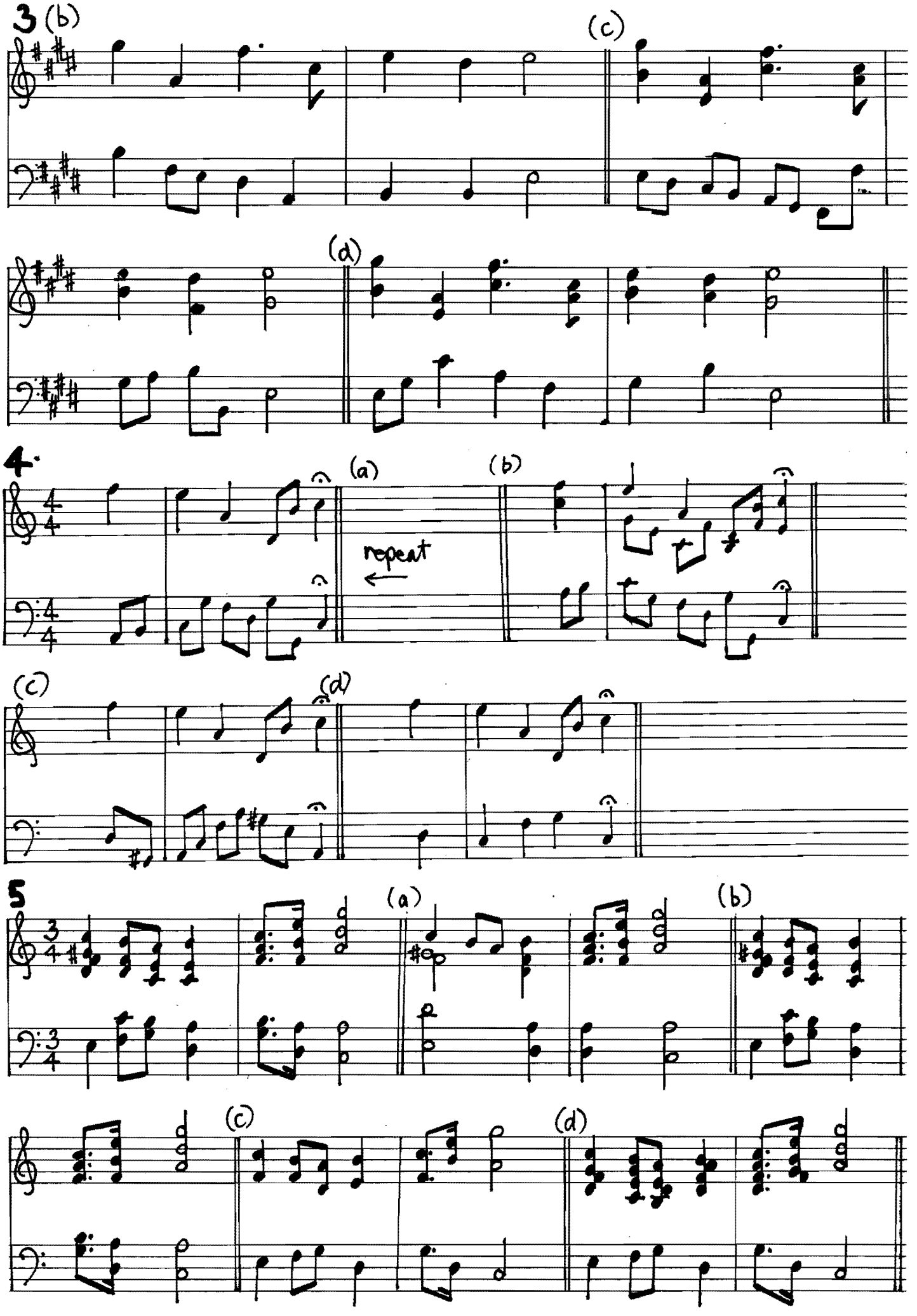
Practice Example 2



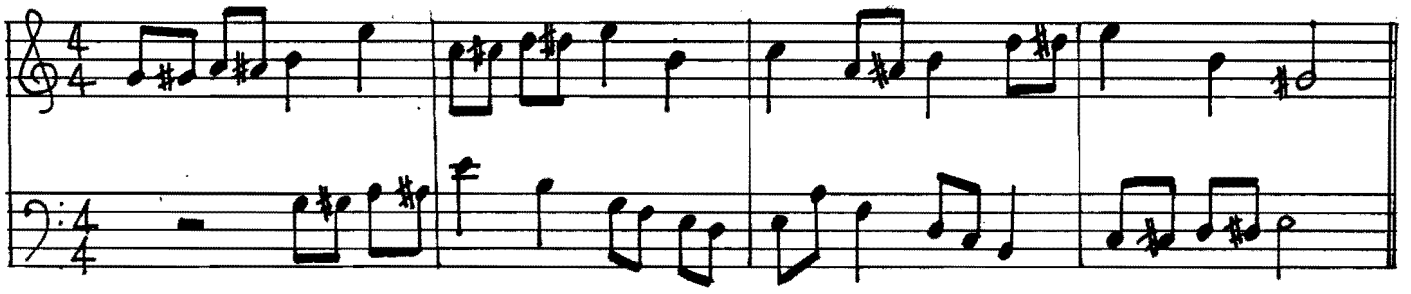




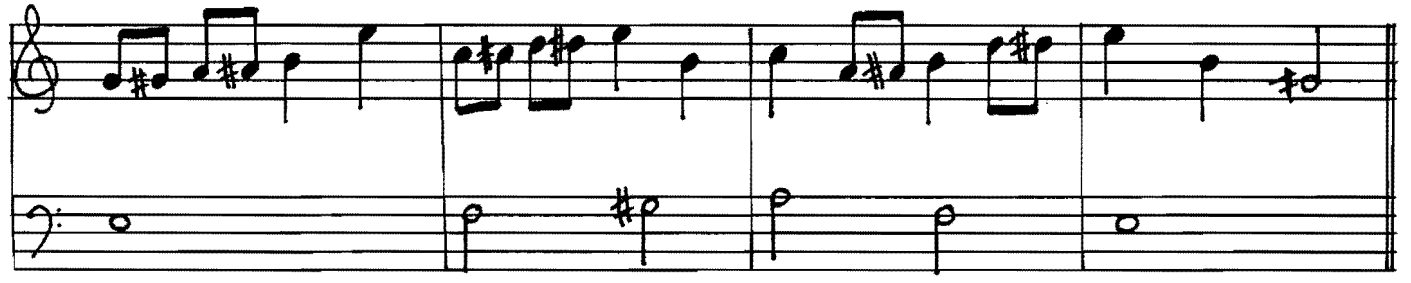

1
(b)
(c)
(d)
2.
(a)
(b)
(c)
(d)
3.
(a)
8ve


3
(b)
(c)
(d)
4.
(a)
(b)
repeat
(c)
(d)
5
(a)
(b)
(c)
(d)

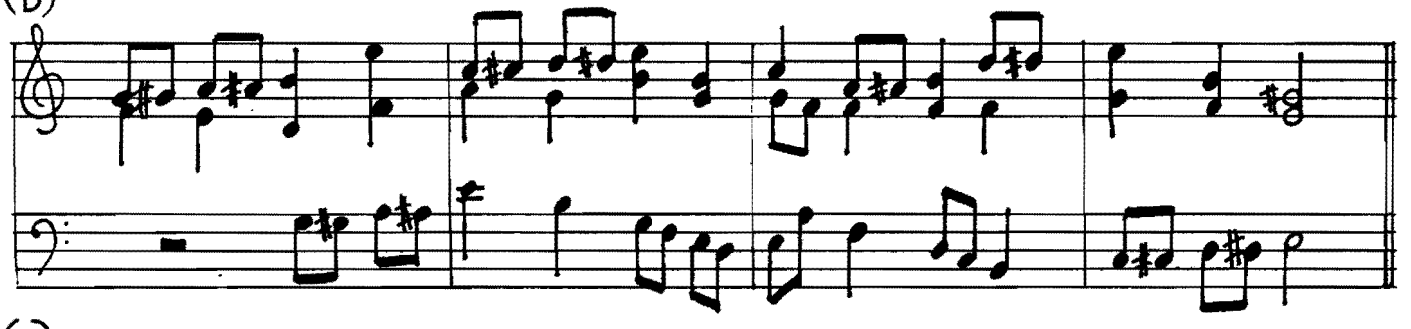
6.



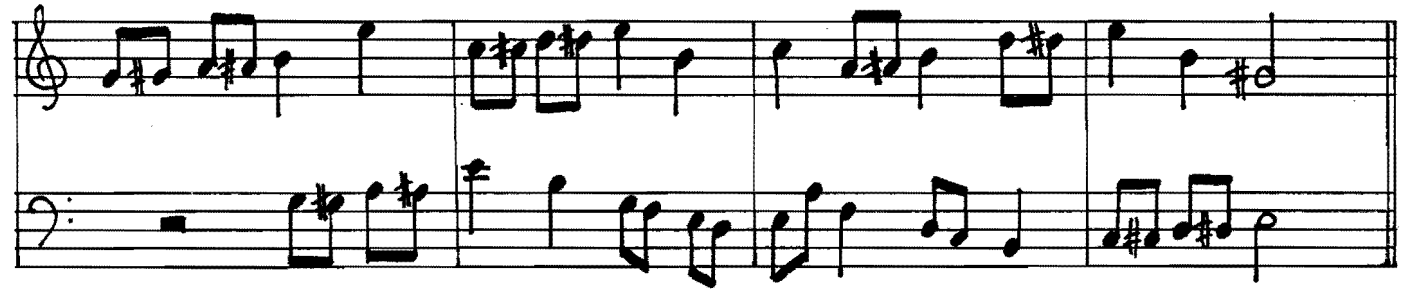
(a)



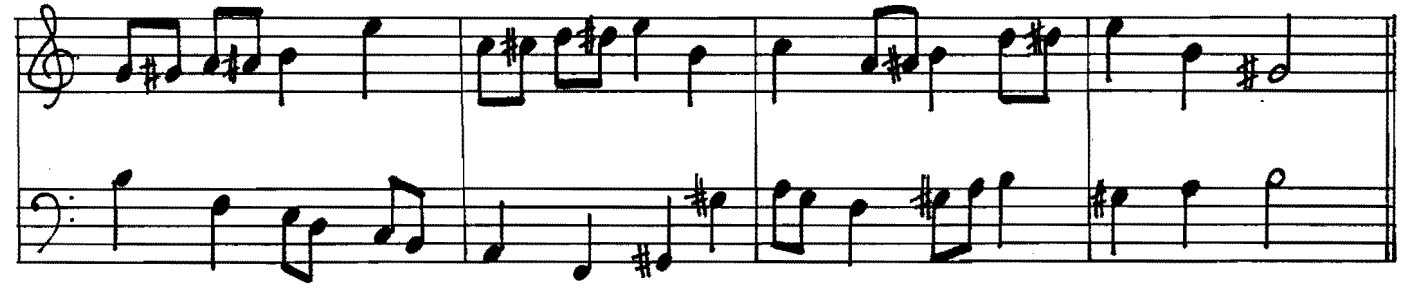
(b)



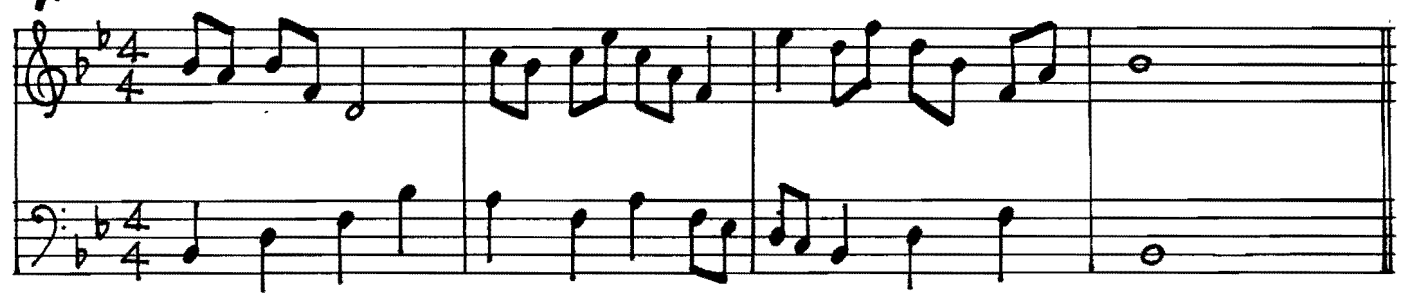
(c)



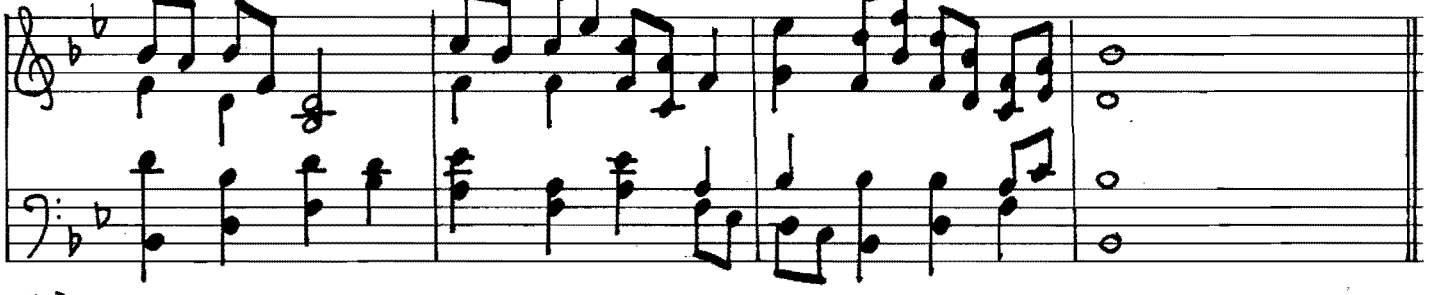
(d)



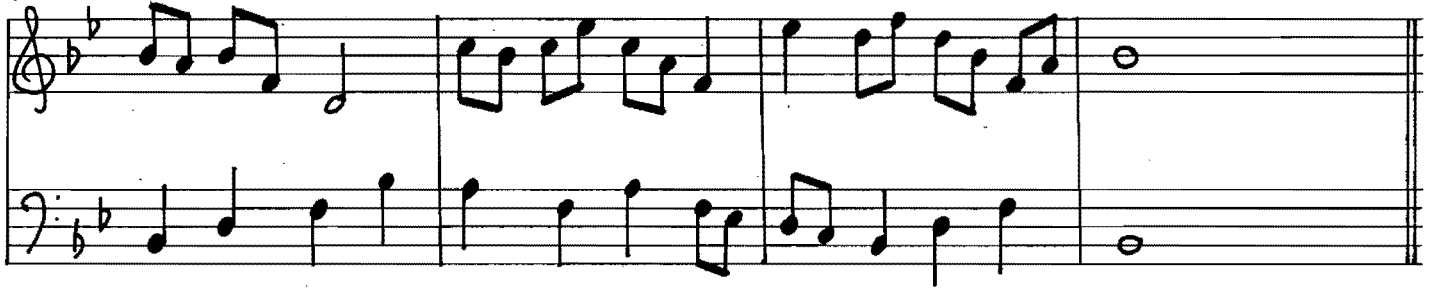
7.



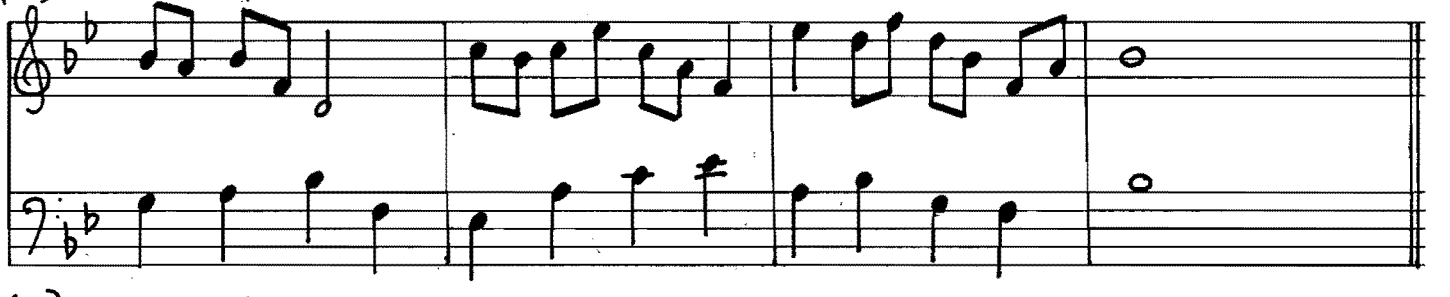
7. (a)



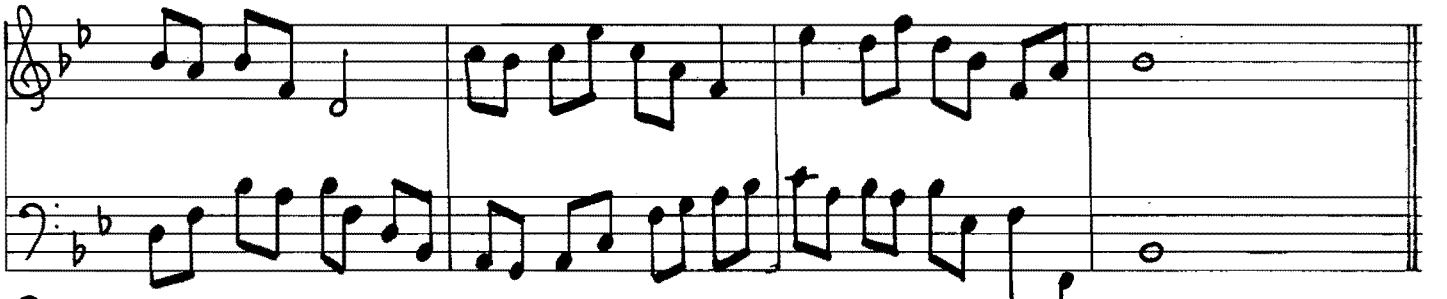
(b)



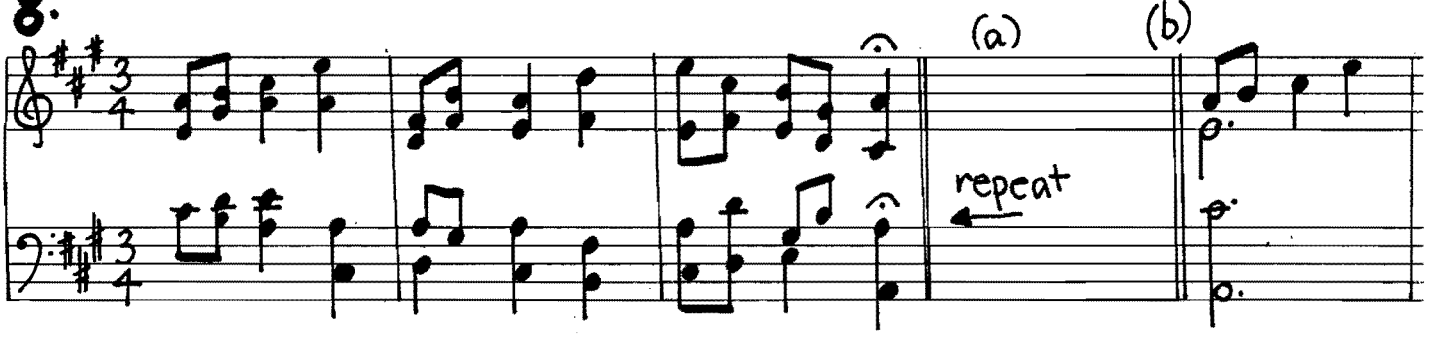
(c)

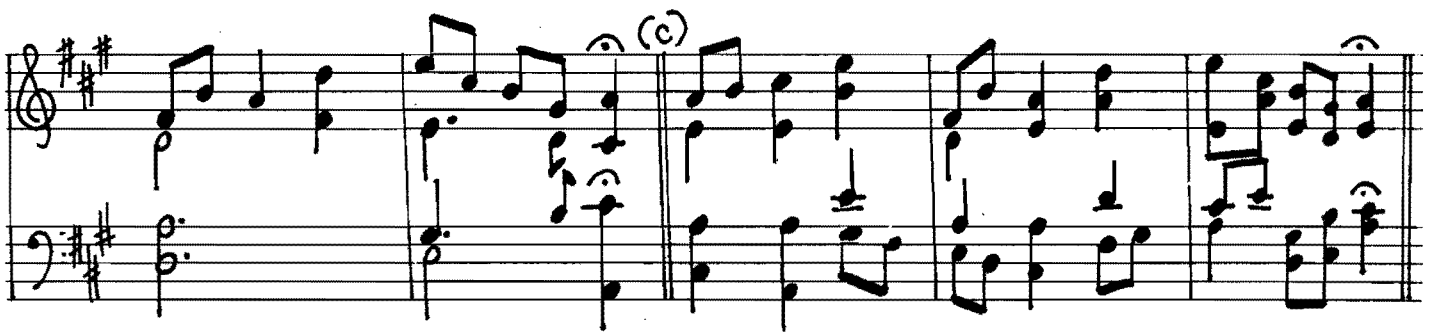


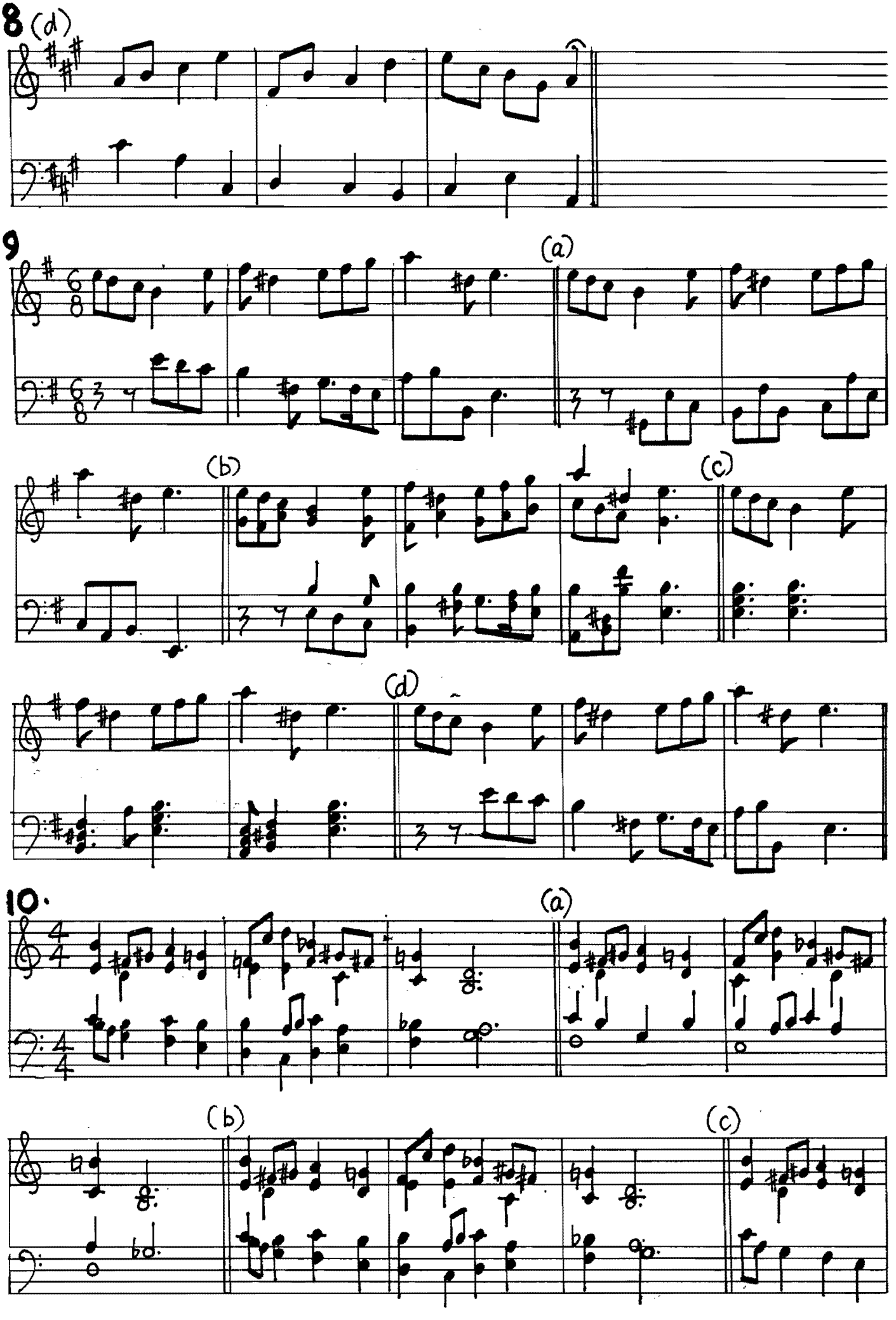
(d)

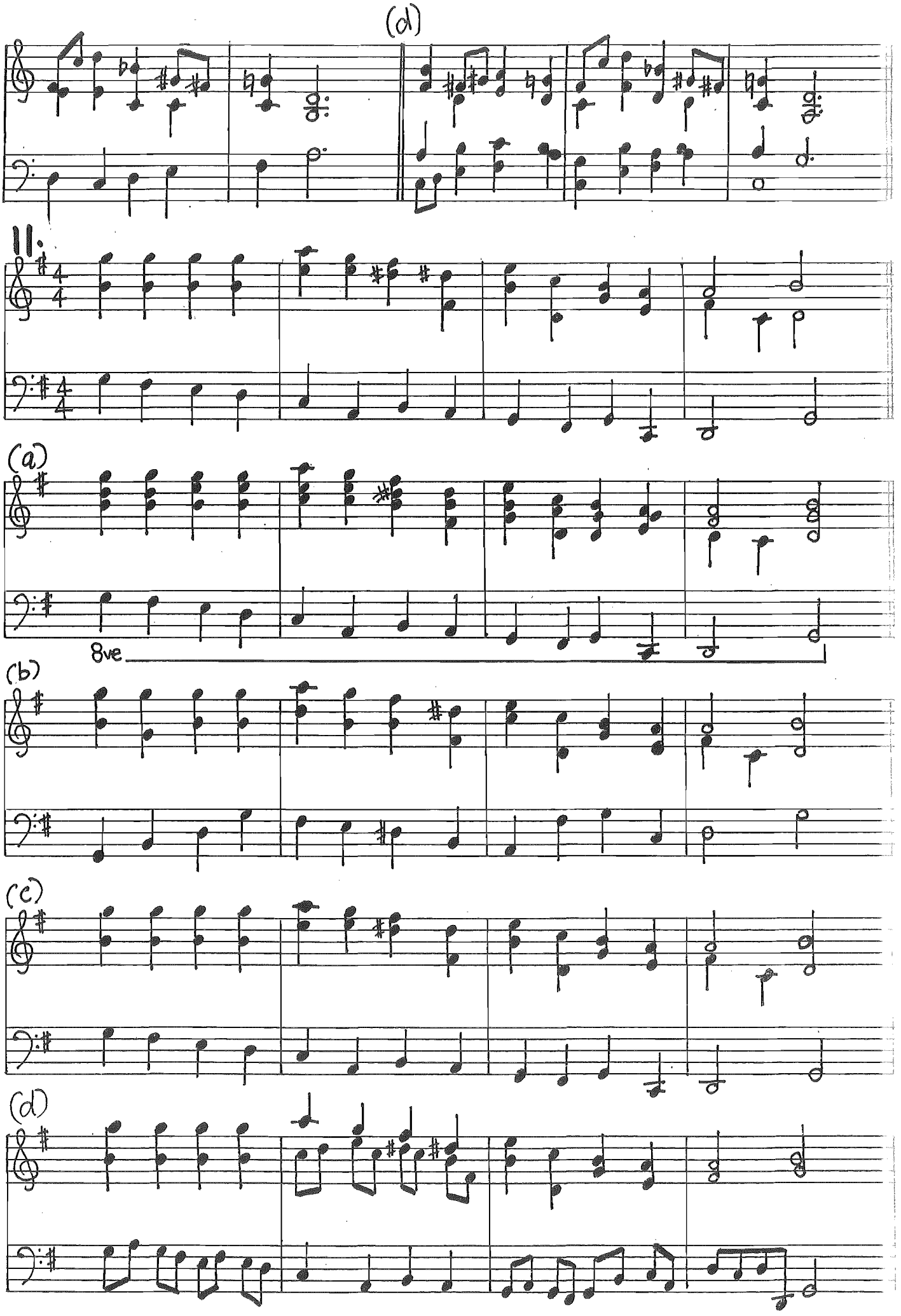


8.

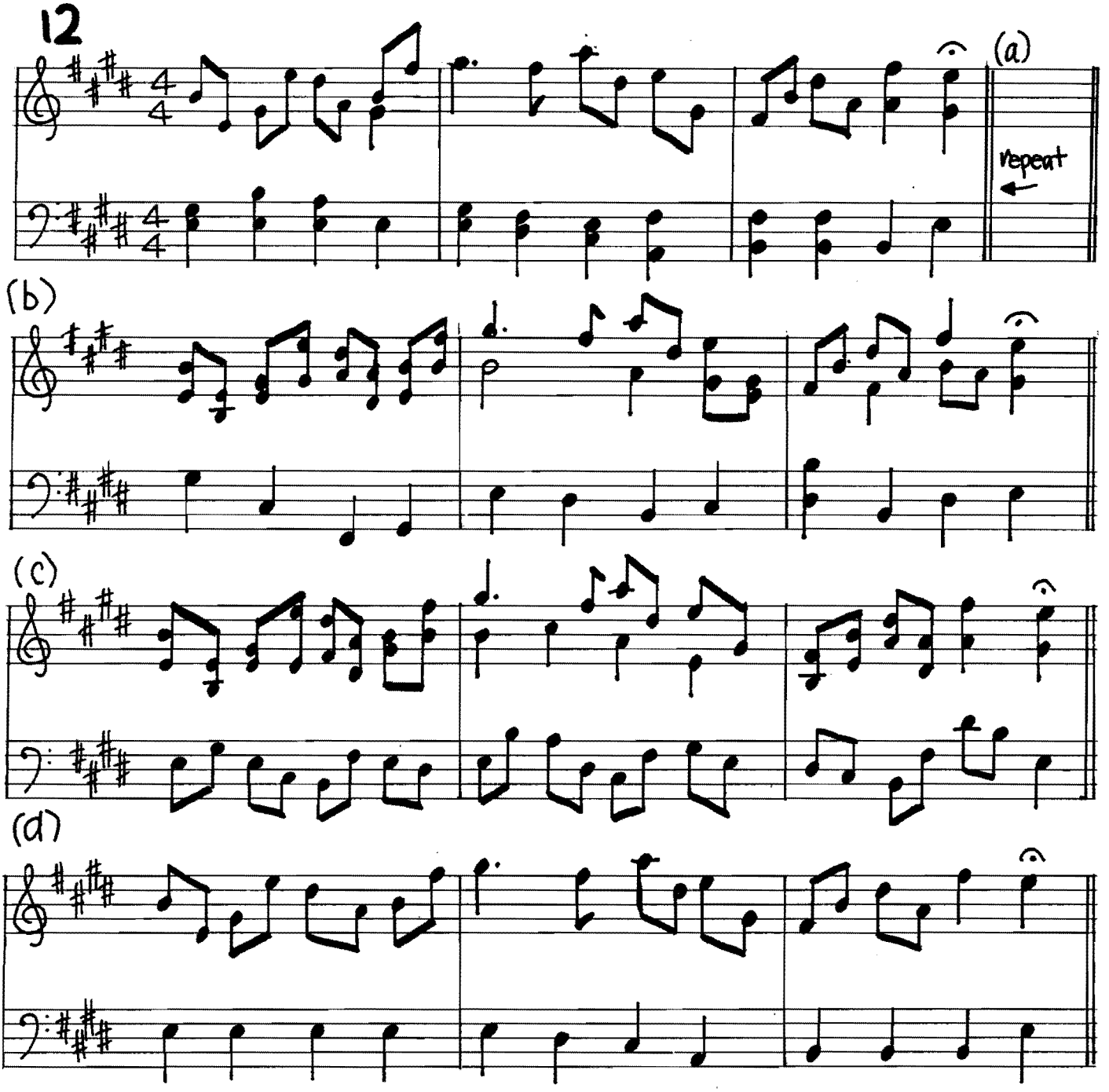




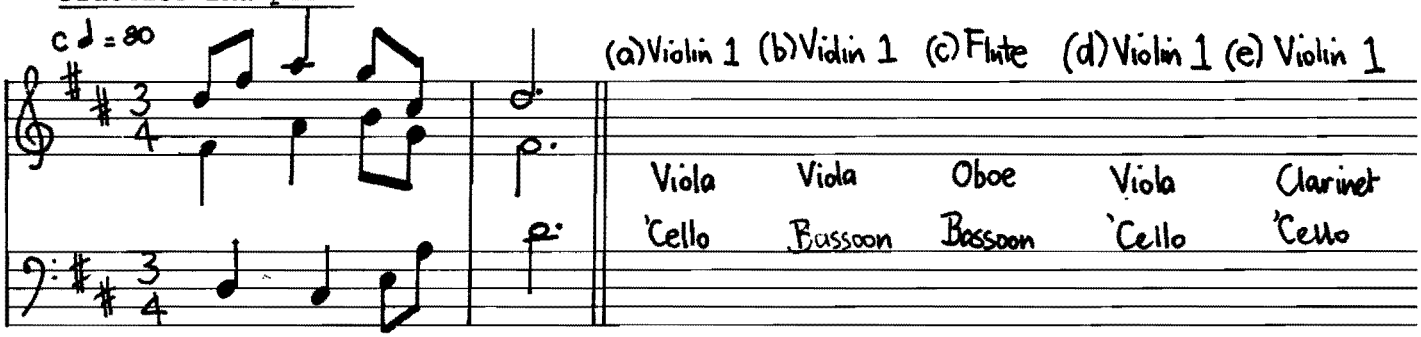

8 (d)
9
(a)
(b)
(c)
(d)
10.
(a)
(b)
(c)


(d)
II.
(a)
8ve
(b)
(c)
(d)

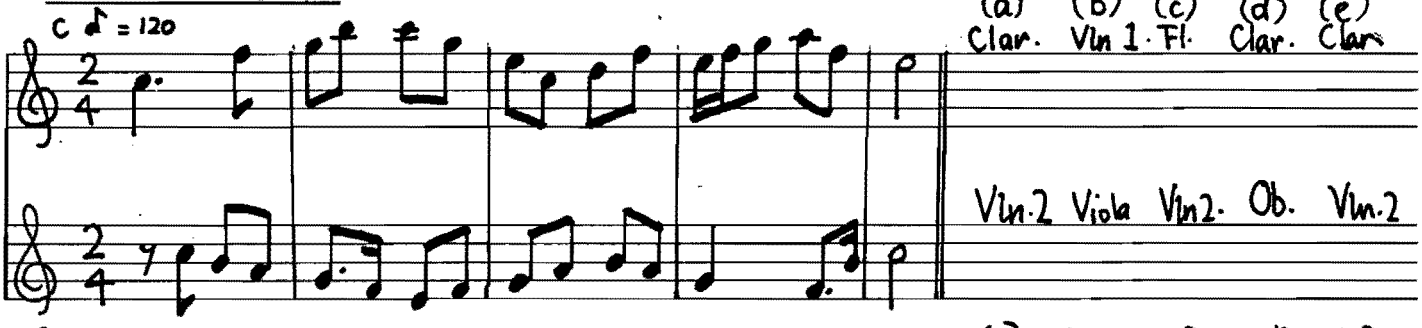
12



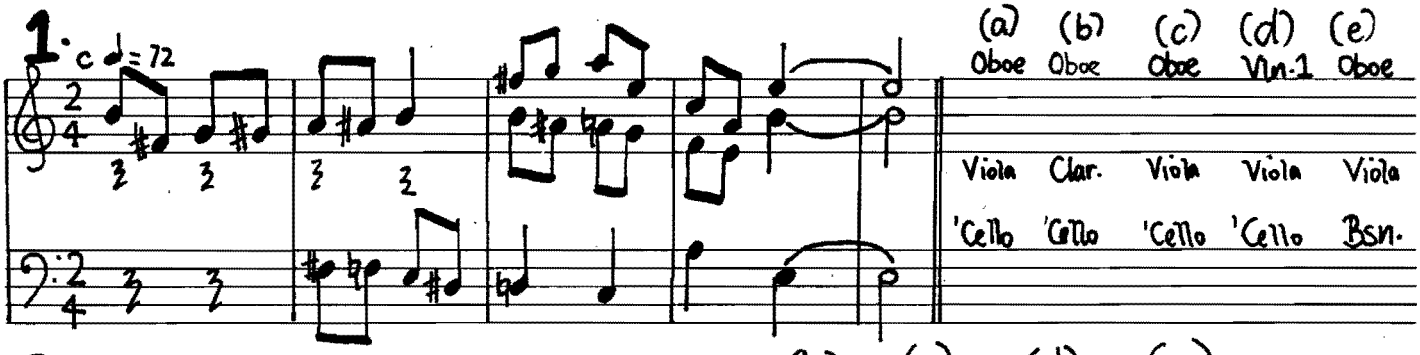
Practice Example 1



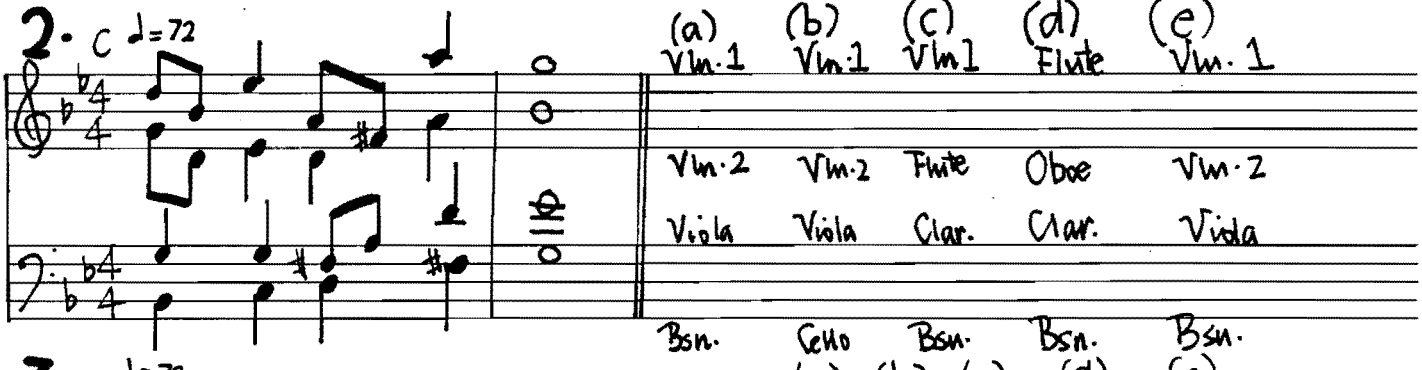
Practice Example 2



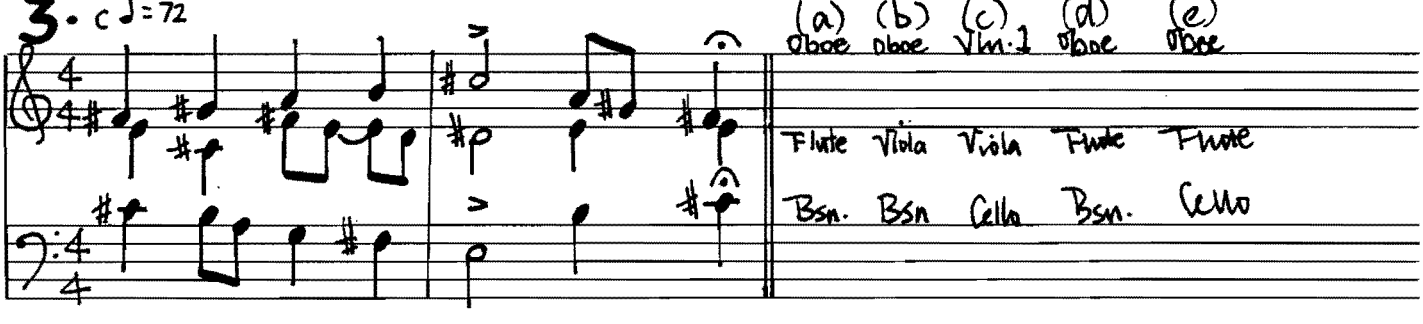
1. c ♩ = 72



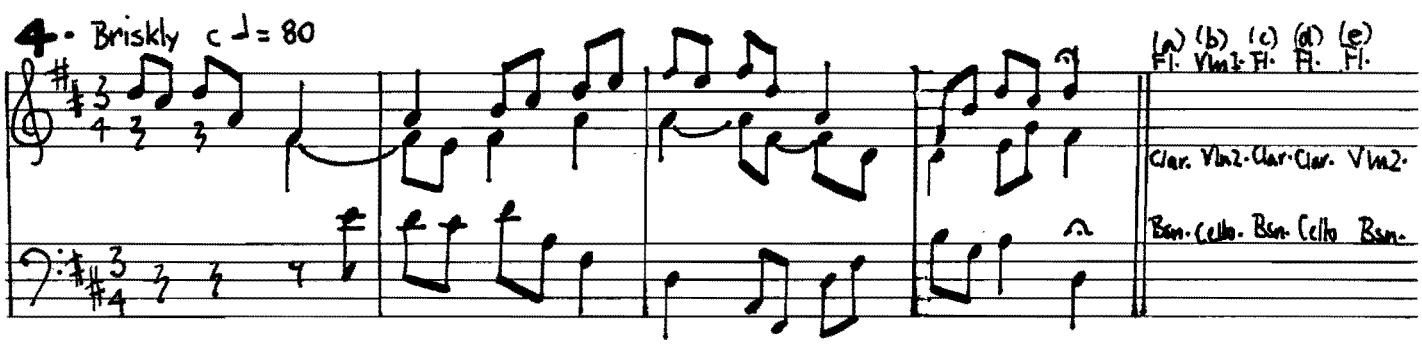
2. c ♩ = 72

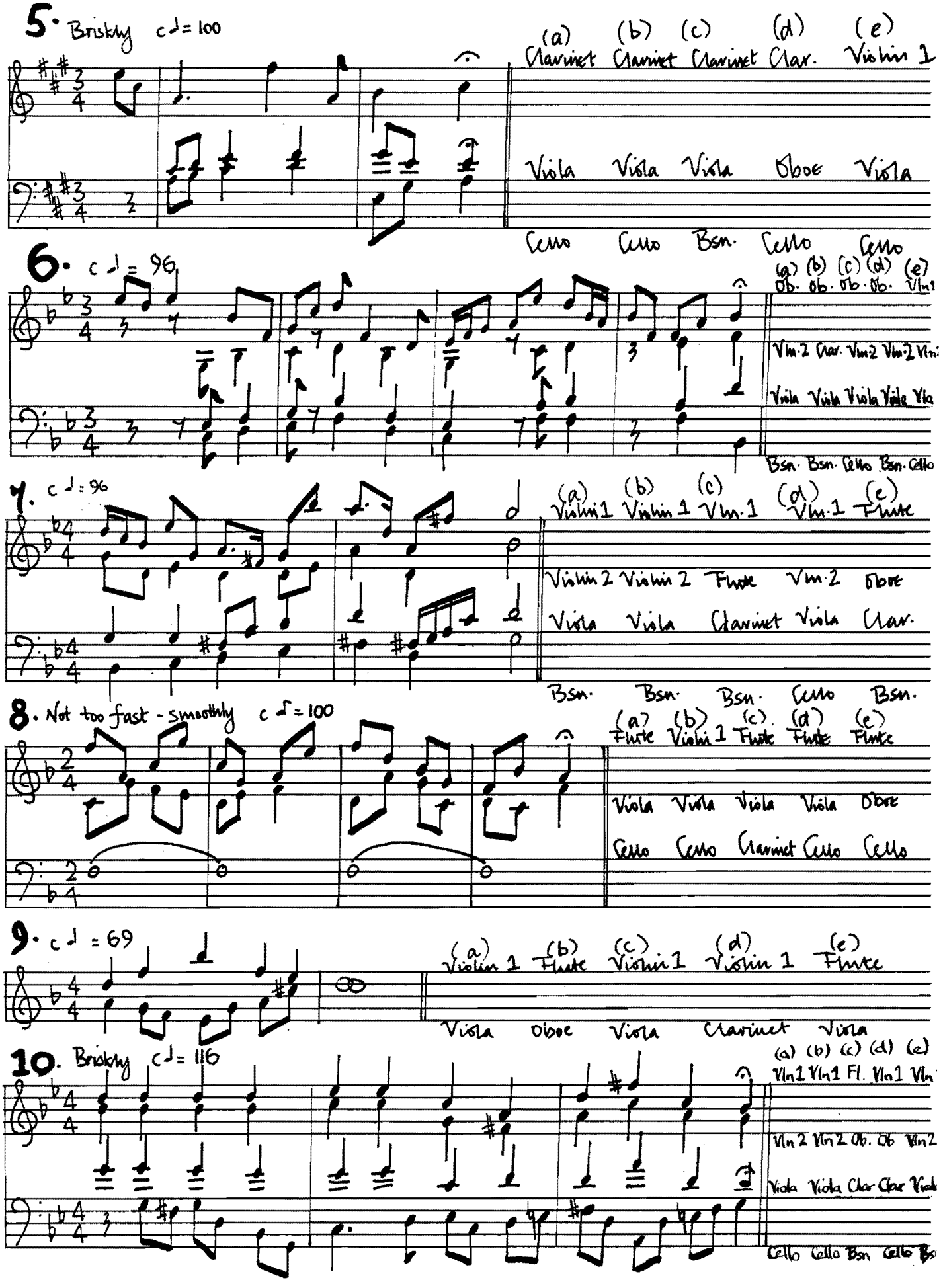


3. c ♩ = 72



4. Briskly c ♩ = 80




5. Briskly ♩= 100
(a) Clarinet (b) Clarinet (c) Clarinet (d) Clar. (e) Violin 1
Viola Viola Viola Oboe Viola
Cello Cello Bsn. Cello Cello
6. ♩= 96
(a) (b) (c) (d) (e)
Ob. ob. Ob. Ob. Vln1
Vln.2 Clar. Vln2 Vln.2 Vln
Viola Viola Viola Viola Vla
Bsn. Bsn. Cello Bsn. Cello
7. ♩= 96
(a) Violin1 (b) Violin 1 (c) Vln.1 (d) Vln.1 (e) Flute
Violin 2 Violin 2 Flute Vln.2 Oboe
Viola Viola Clarinet Viola Clar.
Bsn. Bsn. Bsn. Cello Bsn.
8. Not too fast - smoothly ♩= 100
(a) Flute (b) Violin 1 (c) Flute (d) Flute (e) Flute
Viola Viola Viola Viola Oboe
Cello Cello Clarinet Cello Cello
9. ♩= 69
(a) Violin 1 (b) Flute (c) Violin 1 (d) Violin 1 (e) Flute
Viola Oboe Viola Clarinet Viola
10. Briskly ♩= 116
(a) (b) (c) (d) (e)
Vln1 Vln1 Fl. Vln1 Vln
Vln 2 Vln 2 Ob. Ob Vln2
Viola Viola Clar Clar Viola
Cello Cello Bsn Cello Bs

11. ♩ = 88

(a) Flute (b) Flute (c) Vln.1 (d) Oboe (e) Flute

Bassoon Cello Cello Bassoon Bassoon.

12. Not fast ♩ = 69

(a) Vln.1 (b) Vln.1 (c) Vln.1 (d) Fl. (e) Vln.1

Viola Viola Ob. Ob. Viola

Bsn. Cello Bsn. Bsn. Bsn.

Instruments used were:

Bsn = Bassoon, Vln 1 = Violin 1, Vln 2 = Violin 2, Viola, Cello, Fl. = Flute, Ob. = Oboe, Clar = Clarinet

APPENDIX D

LATIN SQUARES [1]

This system of random letters was used to ensure that the distribution of distractors was even. These patterns can be generated by using four cards with a letter on each. First one card is selected at random (shuffle cards - pick top one). Secondly arrange the columns in random order, (shuffle cards and use the order). Finally arrange the last three rows in random order, (shuffle 3 cards).

A	B	C	D
B	A	D	C
C	D	A	B
D	C	B	A

One of each of these patterns was used for each of the length categories, Short, Medium and Long. In the Shape sub-test, for example, the A stood for the Original, the B for the distractor with the beginning alteration, C for the distractor with the middle alteration and D for the end alteration. For the Shape sub-test a second set of letters was added to arrange the type of distractor alteration.

The randomisation of the items was achieved by drawing the 12 numbers out of a container.

---

1 See FISHER, R. A. and YATES, F. Statistical tables for biological agricultural and medical research, Edinburgh, Oliver and Boyd, 1948, p.60.

APPENDIX E

ADDITIONAL TABLES

TABLE 50 SHOWING ITEM ANALYSIS DATA FOR SHAPE SUB-TEST

	Item Number	d	D	Easiness	Index of Hardness
SHORT ITEMS	3	1.298	.702	49.89	Medium
	8	1.236	.668	50.80	Medium
	10	1.261	.682	50.57	Medium
	12	.868	.469	37.99	Medium-Hard
MEDIUM ITEMS	1	1.172	.634	46.45	Medium
	2	1.374	.743	37.53	Medium-Hard
	6	1.279	.691	32.04	Medium-Hard
	9	1.038	.561	39.59	Medium-Hard
LONG ITEMS	4	1.403	.758	37.99	Medium-Hard
	5	1.478	.799	28.83	Medium-Hard
	7	1.339	.724	17.62	Hard
	11	1.290	.697	41.19	Medium

The "d" Item Analysis - Anstey "Psychological Testing"
Chapter 9 and Appendix 8 - Nelson London 1966.

APPENDIX E

TABLE 51 SHOWING ITEM ANALYSIS DATA FOR RHYTHM SUB-TEST

	Item Number	d	D	Easiness	Index of Hardness
SHORT ITEMS	1	1.649	.969	66.67	Easy-Medium
	2	1.363	.801	39.81	Medium-Hard
	5	1.405	.826	82.41	Easy
	9	1.076	.632	46.53	Medium
MEDIUM ITEMS	7	.745	.438	31.48	Medium-Hard
	10	1.166	.685	31.25	Medium-Hard
	11	1.364	.801	26.16	Medium-Hard
	12	.992	.583	26.16	Medium-Hard
LONG ITEMS	3	1.158	.680	36.34	Medium-Hard
	4	1.193	.701	42.13	Medium
	6	.689	.405	22.92	Medium-Hard
	8	.814	.478	32.41	Medium-Hard

APPENDIX E

TABLE 52 SHOWING ITEM ANALYSIS DATA FOR TEXTURE SUB-TEST

	Item Number	d	D	Easiness	Index of Hardness
SHORT ITEMS	2	1.615	.796	74.42	Easy Medium
	3	1.429	.704	48.60	Medium
	4	1.775	.875	49.53	Medium
	5	1.411	.696	43.49	Medium
MEDIUM ITEMS	8	1.664	.820	30.70	Medium Hard
	9	1.478	.729	37.67	Medium Hard
	10	1.390	.685	31.40	Medium Hard
	11	1.353	.667	46.74	Medium
LONG ITEMS	1	1.700	.838	45.81	Medium
	6	1.439	.710	44.19	Medium
	7	1.091	.538	38.84	Medium Hard
	12	1.512	.745	25.35	Medium Hard

APPENDIX E

TABLE 53 SHOWING ITEM ANALYSIS DATA FOR TIMBRE SUB-TEST

	Item Number	d	D	Easiness	Index of Hardness
SHORT ITEMS	2	1.363	.757	39.81	Medium-Hard
	3	1.158	.643	43.88	Medium
	5	1.068	.593	26.62	Medium-Hard
	9	1.293	.718	40.77	Medium
MEDIUM ITEMS	1	1.342	.745	25.90	Medium-Hard
	7	1.118	.621	25.42	Medium-Hard
	8	1.139	.632	40.29	Medium
	11	1.117	.621	42.45	Medium
LONG ITEMS	4	1.359	.755	46.76	Medium
	6	1.072	.595	33.33	Medium
	10	1.074	.597	51.56	Medium
	12	1.128	.626	31.65	Medium-Hard

TABLE 54 SHOWING CORRELATIONS BETWEEN DATA COLLECTED

	Sex	I.Q.	P.A.T. Readg	P.A.T. Listg	P.A.T. Vocab.	Home Units	Persnl Units	Aspir-ations	Play Rcrds	Attend Concts	No. Rcrds	SHRMT Shape	SHRMT Rhythm	SHRMT Text	SHRMT Tmbre	SHRMT Total
Sex	1.000	0.077	0.082	-0.036	0.070	0.178	0.401	0.232	0.075	0.252	-0.027	0.184	0.174	0.207	0.083	0.313
I.Q.	0.077	1.000	0.743	0.637	0.770	0.159	0.256	-0.006	-0.090	0.109	-0.050	0.181	0.170	0.220	0.157	0.312
P.A.T. Reading	0.082	0.743	1.000	0.731	0.856	0.150	0.187	0.025	-0.061	0.115	-0.056	0.132	0.125	0.224	0.163	0.299
P.A.T. Listening	-0.036	0.637	0.731	1.000	0.726	0.139	0.170	0.017	-0.051	0.100	-0.020	0.053	0.150	0.189	0.154	0.223
P.A.T. Vocabulary	0.070	0.770	0.856	0.726	1.000	0.147	0.214	0.056	-0.063	0.120	-0.003	0.114	0.185	0.213	0.204	0.300
Home Units	0.178	0.159	0.150	0.139	0.147	1.000	0.463	0.267	0.105	0.301	0.186	0.217	0.188	0.202	0.152	0.306
Personal Units	0.401	0.256	0.187	0.170	0.214	0.463	1.000	0.254	0.032	0.353	0.048	0.272	0.235	0.272	0.218	0.419
Aspirations	0.232	-0.006	0.025	0.017	0.056	0.267	0.254	1.000	0.108	0.261	0.178	0.139	0.221	0.124	0.182	0.311
Play Records	0.075	-0.09	-0.061	-0.051	-0.063	0.105	0.032	0.108	1.000	0.161	0.603	0.088	0.159	0.129	0.112	0.240
Attend Concerts	0.252	0.109	0.115	0.100	0.120	0.301	0.353	0.261	0.161	1.000	0.156	0.160	0.137	0.227	0.136	0.259
Number of Records	-0.027	-0.05	-0.056	-0.02	-0.003	0.186	0.048	0.178	0.603	0.156	1.000	0.140	0.195	0.092	0.152	0.276
SHRMT Shape	0.184	0.181	0.132	0.053	0.114	0.217	0.272	0.139	0.088	0.160	0.140	1.000	0.291	0.307	0.300	0.713
SHRMT Rhythm	0.174	0.170	0.125	0.150	0.185	0.188	0.235	0.221	0.159	0.137	0.195	0.291	1.000	0.306	0.268	0.667
SHRMT Texture	0.207	0.220	0.224	0.189	0.213	0.202	0.272	0.124	0.129	0.227	0.092	0.307	0.306	1.000	0.341	0.746
SHRMT Timbre	0.083	0.157	0.163	0.154	0.204	0.152	0.218	0.182	0.112	0.136	0.152	0.300	0.268	0.341	1.000	0.708
Total	0.313	0.312	0.299	0.223	0.300	0.306	0.419	0.311	0.240	0.259	0.276	0.713	0.667	0.746	0.708	1.000

Level of Significance

For a sample of over 400 the .05 level of significance is reached at .098 and .01 at .128.

APPENDIX E

TABLE 55 SHOWING MEANS CALCULATED FROM MULTIVARIATE ANALYSIS DATA

Means of Variables for Girls, Boys; F1 and F2; I.Q.

Girls - N = 204	F1, N = 247	I.Q. 1 = 201
Boys - N = 253	F2, N = 210	I.Q. 2 = 256

Home Unit Means

Girls = 1.44	F1 = 1.28	I.Q. 1 = 1.11
Boys = 1.10	F2 = 1.21	I.Q. 2 = 1.37

Personal Unit Means

Girls = 1.61	F1 = .93	I.Q. 1 = .86
Boys = .74	F2 = 1.37	I.Q. 2 = 1.35

Aspiration Unit Means

Girls = 2.14	F1 = 1.94	I.Q. 1 = 1.86
Boys = 1.62	F2 = 1.75	I.Q. 2 = 1.84

Concerts Unit Means

Girls = .66	F1 = .54	I.Q. 1 = .49
Boys = .41	F2 = .50	I.Q. 2 = .55

Read Music Unit Means

Girls = 1.23	F1 = .91	I.Q. 1 = .78
Boys = .70	F2 = .98	I.Q. 2 = 1.06

TABLE 56 THE F RATIO AND SIGNIFICANCE LEVELS OF THE CLASSIFICATORY VARIABLES AND OF THE 2-WAY INTERACTIONS

Variable	df	F †	p
IQ	1	11.197	<.001
Sex	1	10.824	<.001
Personal	2	10.541	<.001
Home	2	1.367	NS
Aspiration	2	1.739	NS
Concerts	1	2.401	NS*
Read music	1	10.621	<.001
2-way Interactions			
IQ x Personal	2	3.339	<.05
Personal x Read Music	2	4.957	<.05
Personal x Attend Concerts	2	4.109	<.05
Read music x Attend Concerts	1	5.648	<.01

† The F column entries represent the average value derived from several analyses.

* One analysis was significant at .05 level the others failed to reach significance.

APPENDIX F

ADDITIONAL INFORMATION PROVIDED BY SHRMT AND MBQ

METHODS OF RECOGNISING ITEMS

In an attempt to see if the pupils felt they had a method for answering the SHRMT, questions were set and printed on the back of the answer sheet.

These questions were answered at the end of each sub-test. Because it was not possible to devise a reasonably compact method to show all the possible combinations of choices, only the first listed choice was counted. Pupils were not asked to rank their choices of method.

SHAPE

The following questions appeared on the back of the Shape test: "When you were deciding which choice was the original, did you mainly -

(a) "Feel" with your hands, for example, as in playing a piano?

(b) Think of an outline, as in a drawing?

(c) Remember without using any special method?

(d) Guess?

(e) Have some other way? Please try to describe it..."

The number of pupils answering each question was noted and the data was tested for significance.

TABLE 57 COMPARISON OF THE METHODS SELECTED FOR RECOGNISING THE SHAPE ITEMS

Method	(a)	(b)	(c)	(d)	(e)	
f_o	58	94	164	34	63	413
f_e	82.6	82.6	82.6	82.6	82.6	413

$\chi^2 = 122.4$ df = 4 $P < .001$

The high χ^2 value for this table is due to the higher values in (b) and (c) and the low value in (d). The replies to Question (e) produced little that could be classified. The high value of the "Remember without using any special methods" answer (40%) indicated that the pupils considered they were using their memory processes but were unable to verbal-

ise their strategy. The (a) option would be more likely to be chosen by children with some keyboard experience. Option (b) which related to a visual stimulus had more appeal, possibly because experience in the visual arts is more common in our school system. 37% of those responding, reported that they felt or visualised aspects of the melody and this suggests that they had a stronger relationship with the outline and its maintenance.

RHYTHM

The following questions appeared on the back of the Rhythm section: "When you were deciding which choice was the original, did you mainly -

(a) Feel the rhythm in, for example, your hands?

(b) Remember special rhythmic patterns - e.g. triplets?

(c) Remember without using a special method?

(d) Guess?

(e) Have some other way? Please try to describe it . . ."

The replies to these questions about the method of dealing with the test items were collected and the data tested for significance.

TABLE 58 COMPARISON OF THE METHODS SELECTED FOR RECOGNIZING THE RHYTHM ITEMS

Method	(a)	(b)	(c)	(d)	(e)	
f_o	81	82	144	71	27	405
f_e	81	81	81	81	81	405

$\chi^2 = 50.2$ df = 4 P < .001

The high value in Method (c) and the low value in (e) contribute to the high degree of significance. The first two suggested methods were equally received and together accounted for 40% of the replies. The high "Remember without special methods" group represented 36% and like the similar Shape group, reflected the fact that they felt they were attempting the task without being able to describe what they did. It would have been interesting to question pupils to try to find out details of their strategy, for example whether it was some sort of template or other pattern recognition strategy and so on. The higher number who said they had guessed may reflect the greater difficulty associated with some rhythm tasks or that the personal rhythm differences suggested by M. Martenot[1] have not been disciplined.

1 MARTENOT, M. Principes fondamentaux d'education musicale et leur application, Paris, editions Magnard 1970, 188p.

Different cultural experiences are also important in the acquisition of rhythmic control. The Igaga and Versey articles in the Psychology of music journals compare English and Ugandan pupils.[2]

Once again there seemed little of significance in the (e) group but this probably reflected an inability to express their ideas and these people could probably be included in with the "Remember without a special method" group.

TEXTURE

The questions which appeared on the back of the Texture sub-test were: "When you were deciding which choice was the original, did you mainly -

(a) Feel the different accompanying parts with your hands, for example, as in playing a piano?

(b) Count the number of accompanying parts?

(c) Think of the different harmonies?

(d) Remember without using a special method?

(e) Guess?

(f) Have some other way? Please try to describe it . . ."

The replies to these questions about the method of dealing with the test items were collected and the data tested for significance.

TABLE 59 COMPARISON OF THE METHODS SELECTED FOR RECOGNIZING THE TEXTURE ITEMS

Method	(a)	(b)	(c)	(d)	(e)	(f)	
f_o	34	36	79	171	56	14	390
f_e	65	65	65	65	65	65	390

$\chi^2 = 244.9$ df = 5 $p < .001$

The high values in the (c) and (d) columns and the low value in (f) are the main causes for the high χ^2 value. The largest single choice was for that general unspecified group "Remember without a special method". This represents 44% of the total. The more specific methods (a), (b) and (c) add up to 38% of the total. The "Have some other way" group was smaller for this sub-test; perhaps because more options were suggested in (a), (b) and (c) and these may have covered aspects with which they identified.

---

2 IGAGA, J. M. and VERSEY, J., "Cultural differences in rhythmic perception", Psychology of Music, vol.5, no.1, 1977, p.23-27.

IGAGA, J. M. and VERSEY, J., "Cultural differences in rhythmic performance". Psychology of Music, vol.6, no.1, 1978, p.61-64.

TIMBRE

The questions asked on the Timbre sub-test were:-

"When you were deciding which choice was the original, did you mainly -

(a) Recognise an instrument you are particularly familiar with and listen for groups using that instrument?

(b) Remember without using a special method?

(c) Guess?

(d) Have some other way? Please try to describe it . . ."

The results of the data collected were as follows:-

TABLE 60 COMPARISON OF THE METHODS SELECTED FOR RECOGNIZING THE TIMBRE ITEMS

Method	(a)	(b)	(c)	(d)	
f_o	134	176	62	29	401
f_e	100.3	100.3	100.3	100.3	401

$\chi^2 = 133.7$ df = 3 $P < .001$

The high values in (a) and (b) and the quite low value in (d) have produced the highly significant result. The largest (b), is again the "Remember without special method" representing 44%. The (a) group, the second largest, representing 33% considered that they were able to choose their answers by recognising instruments with which they were familiar. The guessing group (c) 15% is about the same as for the Texture test, less than for the Rhythm test and about twice as many as in the Shape test.

FAST AND SLOW PREFERENCES IN THE SHAPE AND RHYTHM SUB-TESTS

During discussion after the first test it emerged that the pupils had definite preferences regarding the speed of the item. When asked for reasons, two answers were given. The reason given for the choosing of fast items was that they could be "heard all in one piece" while the reason for choosing slow items was that they allowed time to "check up after each note." Because the answers were so consistently given in the two forms mentioned, it seemed useful to check the results against their stated preferences to see if their strategies had in fact worked. Papers on which the preferences were marked were sorted and the results noted.

The Absolute time for each item was noted and the Average time for each note calculated, (see Table 61).

It was theorized that the pupils who "heard it all in one piece" would choose the items taking the shortest absolute time and that the pupils favouring the "check up after each note" strategy would prefer the items with the longest average note value, because this would allow more time between the notes.

TABLE 61 LENGTH OF ITEMS

Short items	+
Medium items	++
Long items	+++

(a) Absolute Time

SHAPE		RHYTHM	
Time in secs.	Item No.	Time in secs.	Item No.
3.7	8 +	2.8	5 +
3.8	10 +	3.6	2 +
4.9	12 +	5.6	9 +
6.0	9 ++	6.5	1 +
6.4	3 +	8.0	11 ++
6.6	6 ++	8.4	7 ++
7.0	11 +++	9.0	10 ++
8.5	7 +++	10.7	12 ++
8.6	4 +++	11.5	8 +++
9.8	2 ++	12.4	6 +++
10.0	5 +++	15.1	3 +++
10.5	1 ++	15.5	4 +++

(b) Average Time Per Note

SHAPE		RHYTHM	
Item No.	Average Time per note in secs.	Item No.	Average Time per note in secs.
1. $\frac{10.5}{14}$	.75	1. $\frac{6.5}{5}$	1.3
2. $\frac{9.8}{13}$	.75	2. $\frac{3.6}{7}$	.51
3. $\frac{6.4}{7}$	.90	3. $\frac{15.1}{20}$	.75
4. $\frac{8.6}{22}$	.40	4. $\frac{15.5}{22}$	.70
5. $\frac{10.0}{21}$	.50	5. $\frac{2.8}{6}$	.47
6. $\frac{6.6}{14}$	.47	6. $\frac{12.4}{20}$	.62
7. $\frac{8.5}{21}$	.40	7. $\frac{8.4}{14}$	.60
8. $\frac{3.7}{7}$	.53	8. $\frac{11.5}{20}$	.57
9. $\frac{6.0}{13}$	.50	9. $\frac{5.6}{7}$	.80
10. $\frac{3.8}{6}$	.63	10. $\frac{9.0}{13}$	.70
11. $\frac{7.0}{22}$	.32	11. $\frac{8.0}{13}$	.60
12. $\frac{4.9}{7}$	.70	12. $\frac{10.7}{14}$	.76

Tables 62 - 65 show the results of the pupils who indicated that they preferred Fast or Slow items and their performance in terms of those items. The items that fitted each category were noted and the pupils' papers checked to see which category they belonged to. The table was then tested for Significance.

For the Shape sub-test items in which the Absolute length (overall time) was used, the Fast preferrers' results produced the χ^2 value of 8 df = 2 with P < .02. In Table 62(a) the larger number of "Higher fast" scores and the Lower number of "Higher slow" scores contributed to the significant value. This result would support the efficacy of the "heard it all in one piece" strategy by the Fast preferrers.

Table 62(b) shows the results of the slow preferrers in the items in which Absolute time was considered. The χ^2 value is not significant.

The Shape items considered in terms of the "Average time per Note" for the Fast and Slow Preferrers produced these results. Table 63(a) shows that for the Fast Preferrers the χ^2 value was 6.15, df = 2 which is significant at the .05 level. The significant result is influenced largely by the high entry in the "Higher slow" scores category. This result is confusing because the pupils involved said that they preferred fast items but in fact did better on slower ones.

The Slow Preferrers have a table that shows that the χ^2 value is influenced by the high "Higher slow" scores. This result is significant at the .01 level. This would support the efficacy of the slow preferrers' method of checking up after each note.

The Rhythm results were checked and recorded and tested for significance.

Table 64 which concerns the Absolute or overall time of the pieces shows that all pupils scored better on the fast pieces whatever their stated preference was. Significant χ^2 values were obtained for both tables, and in both cases the high values in the "Higher Fast" categories has had a strong influence on the χ^2 value.

Table 65 which concerns the Average time per note pieces, shows clearly that there was no significant relationship between the stated method (i.e. checking after each note) and the particular items, whichever type of item was preferred.

For the Rhythm items then, the Average length of the note did not appear to help or hinder in the "checking after each note" method. The overall length of the piece was, however, significant and the Fast items, no matter what the stated preference, were performed better.

The size of the sample for Rhythm was smaller than the sample for Shape, because while the initial sample of 100 Shape and 100 Rhythm results proved adequate for the final processing of the Rhythm results, the pattern of the shape results proved to be less clearcut. An additional group of Shape papers was selected and processed with the result that the tendencies suggested earlier were strengthened.

TABLE 62 SHOWING COMPARISON OF PREFERENCES OF FAST AND SLOW ITEMS - SHAPE SUB-TEST

Using the Complete Shortest and Longest Time Items (Absolute)

Fast Item Number	Slow Item Number
8, 9, 10, 12.	1, 2, 4, 5.

(a) Preferred Fast

Scores

	Higher Fast	Higher Slow	Equal No.	Total
f_o	44	22	29	95
f_e	31.6	31.6	31.6	95

$\chi^2 = 8.0$ df = 2 P < .02

(b) Preferred Slow

Scores

	Higher Fast	Higher Slow	Equal No.	Total
f_o	23	19	23	65
f_e	21.6	21.6	21.6	65

Not significant

TABLE 63 SHOWING COMPARISON OF PREFERENCES OF FAST AND SLOW ITEMS -

SHAPE SUB-TEST

Using the Average Speed Per Note Items

Fast Item Number	Slow Item Number
4, 6, 7, 11	1, 2, 3,12

(a) Preferred Fast

Scores

	Higher Fast	Higher Slow	Equal No.	Total
f_o	27	43	25	95
f_e	31.6	31.6	31.6	95

$\chi^2 = 6.15$ df = 2 P < .05

(b) Preferred Slow

Scores

	Higher Fast	Higher Slow	Equal No.	Total
f_o	16	34	15	65
f_e	21.6	21.6	21.6	65

$\chi^2 = 10.59$ df = 2 P < .01

TABLE 64 SHOWING COMPARISON OF PREFERENCES OF FAST AND SLOW ITEMS - RHYTHM SUB-TEST.

Using the Complete Shortest and Longest Time Items (Absolute)

Fast Item Number	Slow Item Number
1, 2, 5, 9.	3, 4, 6, 8

(a) Preferred Fast

	Scores			
	Higher Fast	Higher Slow	Equal No.	Total
f_o	32	2	2	36
f_e	12	12	12	36

$\chi^2 = 49.9$ df = 2 P < .001

(b) Preferred Slow

	Scores			
	Higher Fast	Higher Slow	Equal No.	Total
f_o	4	27	9	40
f_e	13.3	13.3	13.3	40

$\chi^2 = 33.7$ df = 2 P < .001

TABLE 65 SHOWING COMPARISON OF PREFERENCES OF FAST AND SLOW ITEMS - RHYTHM SUB-TEST.

Using the Average Speed Per Note Items

Fast Item Number	Slow Item Number
2, 5, 7, 8	1, 3, 9, 12

(a) Preferred Fast

Scores

	Higher Fast	Higher Slow	Equal No.	Total
f_o	11	12	12	35
f_e	11.7	11.7	11.7	35

Not significant

(b) Preferred Slow

Scores

	Higher Fast	Higher Slow	Equal No.	Total
f_o	13	16	12	41
f_e	13.7	13.7	13.7	41

Not significant

COMPARISON OF SCHOOLS USED FOR SHRMT AND MBQ

TABLE 66 MEANS AND SDs OF BRANSTON AND KIRKWOOD INTERMEDIATE SCHOOLS' SHRMT RESULTS

	FORM 1			FORM 2		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N
BRANSTON						
Boys	19.10	3.20	18	16.29	3.94	58
Girls	22.30	5.43	13	20.51	5.62	51
KIRKWOOD						
Boys	17.40	4.45	128	17.77	5.05	56
Girls	19.17	4.27	87	22.34	5.33	54

Comparison of the Branston and Kirkwood Intermediate Schools SHRMT Results

Table 66 shows that in each group the boys' result is lower than the girls as would be expected from previous discussion. The Form 1 Branston pupils have a higher score because the sample was smaller due to the other Form 1 classes having been used for the Pilot sample. The Kirkwood results show that the Form 2 pupils have scored higher than the Form 1 pupils and this fits the expected pattern. At the Form 2 level the Kirkwood results are higher than the Branston results.

Table 67 shows the music involvement of the pupils. At Branston the kind of music lessons given involved playing percussion instruments and this accounts for the relatively higher number of Branston pupils in the "Play" category. The definition of "Play" given at the time of the administration of the Musical Background Questionnaire indicated that pupils had to be able to play a number of tunes, six or more, competently - i.e. in time and mainly in tune, in order to qualify to belong to that category. The Kirkwood pupils had not been involved in the same programme and the "Play" category would indicate more experience of instruments at home, (see Table 67).

TABLE 67 (a) SHOWING A COMPARISON OF BRANSTON AND KIRKWOOD INTERMEDIATE SCHOOLS' PUPILS MUSIC INVOLVEMENT

	Learn	Play	Not Learn or Play	Totals
Branston	(25%) 35	(47%) 66	(28%) 39	140
Kirkwood	(31%) 100	(21%) 69	(48%) 156	325
	135	135	195	465

TABLE 67 (b) SHOWING COMPARISON OF THE BOYS' AND GIRLS' OF BRANSTON AND KIRKWOOD INTERMEDIATE SCHOOLS' MUSIC INVOLVEMENT

	Learn	Play	Not Learn or Play	Totals
Branston Boys	(12%) 9	(48%) 36	(40%) 30	(100%) 75
Kirkwood Boys	(21%) 39	(18%) 34	(61%) 112	(100%) 185
Totals:	48	70	142	260
Branston Girls	(40%) 26	(46%) 30	(14%) 9	(100%) 65
Kirkwood Girls	(44%) 61	(25%) 35	(31%) 44	(100%) 140
Totals:	87	65	53	205

The Girls at both schools had similar proportions in the "learn" category with Kirkwood being slightly ahead. This category would have been the area in which it would be expected that socio-economic factors would be evident. Because of the different schools' programmes the proportion of Branston Girls who "Play" is higher than Kirkwood and this leaves the "Not Learn or Play" category with more Branston pupils in it.

For the Boys the "Learn" group is higher for Kirkwood, which is as would be expected. The "Play" groups consist of more Branston pupils and so does the "Not Learn or Play". These figures taken together as in Table (a) show the comparison between the pupils of each school. The differences between the girls and boys are masked in such a presentation. The overall picture shows that more Kirkwood pupils "Learn", but that more Branston pupils "Play" and this leaves more Kirkwood pupils not involved. Several pupils, mainly Kirkwood, belonged to the school choir but did not learn or play and so were included in the "Not Learn or Play".

In general it may be said that were it not for the school music programme at Branston Intermediate the "play" music category would have contained more Kirkwood pupils. This shows that socio-economic differences do exist as far as the home opportunities for music are concerned but that the school system can compensate for these to some degree. Although the school may provide beginning opportunities for playing it is likely that a home that is willing and able to provide music lessons for their children will have provided a more musical background.

APPENDIX G

COMPOSERS AND LISTENERS

Any piece of music represents the creative working out of ideas by the composer. The dedicated listener will grasp a greater or lesser number of the ideas as presented, but may also use these ideas as a launching pad for his or her own self-exploration and ideas. In this matter of the presentation of ideas in music, what do composers hope listeners will be able to hear, and to what extent do the listeners feature in the composer's thinking?

In an attempt to collect some answers to these questions a number of New Zealand Composers were interviewed.

The New Zealand Composers interviewed were: Gillian Bibby, Jack Body, Dorothy Buchanan, John Cousins, Lyall Cresswell, David Farquhar, Douglas Lilburn, Ian McDonald, Jenny McLeod, Philip Norman, Kit Powell, John Rimmer, Jack Speirs, Antony Watson.

It should be understood that the opinions expressed in the interviews may not now be the considered opinions of those composers. However this does not alter the validity of the comments made as they express opinions held by a sample of composers at a particular time.

Question 1.

To what extent do you think of the listener in your composing? A variety of replies was given to this question. Some said they thought of the piece first. Others said the performers were their first consideration.

Lilburn said he didn't think of the listener when he first started to compose as he felt he had too many other things to think of. He would, however, always take stock of the situation, "because I think this is an artist's job, not to write an obscure piece for what should be essentially a public occasion. If you want to write an obscure piece, you write it on your own responsibility."

Powell said he thought of the performers first and the audience that would go with them. When he wrote 'The Fisherman and his Wife', which was for a school performance, he also thought of the parents who would be listening.

Buchanan said, "I don't think of the listeners but of the instrumentalists involved. As an orchestral player myself I am aware of the boredom of sitting for bars out. However I hope the listeners will catch on to what the performers are putting over."

Bibby said she considered particular audiences as she wrote music on commission. This meant that she considered the expected listeners greatly in her planning, as far as the difficulty of the piece was concerned.

Cousins, on the other hand, said he didn't think of the listener at all as he regarded himself as the listener, and if the piece worked for himself when it was turned into sound, then it was finished.

Rimmer said that in composition he was following a particular path and that he was not really concerned much whether the audience comprehended it or not. "I have a feeling at the back of my head that they will." However, if he wrote a piece for school children to perform, he would be obviously writing for them. "You don't necessarily write down to them because what you give them is a piece of yourself, you give them a piece of your own work."

Others who wrote for occasions involving drama in some form thought of the whole effect.

Norman: "I think about the listener a great deal - in the sense that I consider practicalities of performance throughout the compositional process, and this includes likely audience receptivity as well as performance logistics."

Question 2.

What do you hope will be heard by the average listener on the first hearing of one of your pieces?

One of the difficulties experienced in listening to contemporary music, is that the listener may only have the opportunity to hear the piece once within a reasonable time span.

Farquhar said he doesn't intend a piece of his to make all its impact on one hearing, otherwise people will not come back to hear it again.

Cousins said he didn't worry about what the listeners would hear on the first hearing of a piece, "because every single person is going to be different. It depends on their environment, their background, their

ear, so many things. What I hope is that music would make them think. I don't really see that the audience is very different from me really. I put the sounds together and express my humanity, and consequently I think it is fair to say that if they can feel humanity in the music then that's all I want."

Powell thought that it was important that some elements be grasped at a first hearing. "A good piece of music allows you to hear new things each time. It is important that at the first hearing the listener gets enough to want to hear it again."

Bibby expects her pieces to be taken at face value. She says they are essentially a psychological experience and the composer is concerned with the psychological reaction of the listener. The listeners should be unaware of their bodies and so she plans a visual focus to help concentration and attention.

Buchanan said "What is heard, will depend on the people and the time, and whether there has been any preparation, for example by discussion, or programme note. If there has been no preparation the experience will be very abstract. Music has a plan and is made of aspects that can be measured, recorded and delighted in."

Lilburn believes that the first impression should be a general impression, and this should tell the listeners whether the work is going to interest them in depth. This first impression is concerned with feelings as well as structure.

Speirs said that in a first hearing of a piece the overall concept had to be conveyed, or else the piece hadn't really made it. This concept could be an atmosphere, an expression of unity or a message. However, the first hearing of a work might be quite inaccurate. The listeners could get the wrong ideas about the piece because they were unfamiliar with contemporary music.

McLeod thought that it was only important to grasp the general process on the first hearing. "Once you get the basic idea in your mind, then you are in a position to listen intelligently. If I had to put music across to people I would try to do it by association, because music is basically abstract, it is something which cannot be understood. In order for some communication to come across, there must be some association with something else that people do understand. For me, I think that if a piece is structured and has intellectual content substance, I believe that the average person senses this subconsciously."

Cresswell said, "I don't expect people to hear terribly much on just one hearing. I think they can go away with some sort of impression. There are some listeners I expect more of than others, and some I would hope, would hear some things that others don't worry about."

McDonald said of many of his pieces,that "the marvellous thing about this type of music is that there are no hidden relationships in it. The form is what you actually hear, in the same way as the shape of a hill is its form."

Rimmer said he was thrilled if the listeners were excited by the sort of sounds they heard. "I like to portray exciting things in sound. I think this is the whole business of our understanding - you sense a relationship between sounds. Too often we only hear a piece once or twice, and that's it."

Question 3.

How important is form in your composition, and how much of it do you hope listeners will grasp?

Lilburn said he thought formal procedures were very important. "Any great music that you hear from any period is full of formal procedures. Sometimes they are obvious; sometimes they are very subtle. Listeners will intuitively recognise that the work is consistent and controlled even though they don't recognise the details of structure: they will recognise that there is a formal principle being used. I mostly have a sense of when I think a composer is being logical and consistent in his work."

Speirs replied, "Form is extremely important. The putting together of materials to make some sort of impact is very important. The formal consideration of the composer quite often may have nothing to do with the listener, especially the unsophisticated one. Schoenberg says that before even writing a note of a piece, he's got the idea of the whole piece in his head, not always in great detail, but the general atmosphere of the piece is there, from beginning to end. I think other composers would say that the shape would start to build as you wrote the piece. I can't believe this. I think one obviously has the shape, but when you start writing, things may alter and the material may take you a different way." He went on to say that a composer doesn't express "pure form", he erects a formal framework whereby the expressive content will be ordered.

McLeod said, "Overall I try to start with a large form and work in the bits and details. So far as I am concerned form is anything that belongs to structure - the whole piece is form. I haven't got any time for the sort of composition which the composer describes as pure intuition. I wouldn't wish my audience to aurally appreciate the finer details of formal structure. I do this to keep myself happy. I think that too many composers pay what I would call superficial attention to form. There are so many composers who are just working intellects, who are not questioning the reasons for which they are actually making pieces of art - it is just so much abstract detail. When you listen to the work of another composer you mainly can't discover the processes he is using - mostly you have to read about them.

"I've taken the step of deliberately incorporating extra musical ideas, and this, in a way, has become just as important as whatever goes on in the music - so I now have this 'whole'. In a way, the content of what I say in words is the content of the piece. I don't write 'pure' music without words anymore - it is so foreign to people. I count on the fact of there being something outside of the music to keep the people's minds going, and that gives them a frame of reference."

Norman said, "the form of the piece is the piece itself. It provides the unity, even if it is a form of non-form - a type of musical stream of consciousness. Usually I allow the form to evolve from the material of the piece itself, and try to cultivate and control it. Sometimes I predetermine it, but I favour this approach less as it seems somewhat clinical and calculating, creating premature arbitrary strictures on the piece - rather like casting the die.

"I would not expect the listeners to grasp the form of a piece easily (unless it is a set classical form), but I would expect them to realise its absence, should it be lacking. An intuitive grasp of form can only be achieved once the ability to hear in the fourth dimension of time is developed.

"A ready comprehension of form is a developed skill, one which no composer could reasonably expect his average listener to possess."

Cresswell: "Form is very important. It doesn't matter whether listeners hear whether there is any form, or not, as long as they feel that the piece is unified in some way. I try to put in things that people will recognise the second or third time through the piece. I try to put certain points where people can think this ties in with something else."

In fact then, Cresswell said he tried quite deliberately to plan for the listeners so as to carry them through from the beginning to the end of the piece.

Body: "It is necessary to have some idea of structure just as a means of writing music. A person can appreciate a piece of music in a spontaneous, sensual way just by listening, or he can study it, or, by having good ears, be able to perceive the structure. Structure requires memory - sharp aural memory. Structures are becoming more complex in music, but these structures are just a way of building. Aesthetically, finally however, it's the shape and textures of the music which people respond to. If you take something like Boulez' structure it sounds like pure chaos, but in fact it is very tightly integrated to a basic system. In it everything relates to everything else. But the actual effect is one of chaos. If you take a piece of Cage and stand it beside Boulez, perhaps it sounds similar, but one is highly structured and the other has no structure in terms of predetermined structure. I think that with music it is not so much structure, but gesture, and this makes a lot of contemporary music valid. It does have structures but these are not mathematical. To be listened to, they must be listened to as physical gestures, as emotional gestures. Composers use artificial means of structuring to build these same gestures - some people have a genius for doing it - it's not intuitive, it's mathematical, but their vision of the finished gesture is the genius, the intuitive genius. This is akin to classical music. In Beethoven there are gestures - there's a beautiful dramatic gesture which is timed exactly - drawing up tension and releasing it. The language is different, but the expressiveness is the same."

McDonald: "I think structure is a rhythmic thing, it is the way periods fall one after another in time and balance, or don't balance. I like to try and see the world as something that I do not impose upon - so a lot of serious pieces of mine are attempts to let the structure create itself. I like to think that I don't impose an intellectual limitation on structure, so I use a lot of chance methods, formulating or letting a structure formulate itself, and combinations of chance and formal concepts like sonata form, or the return."

Rimmer: "Form is very important, even to the extent of planning the outline of a whole composition before actually composing. Usually it works to some sort of proportion. Sometimes I use mathematical proportions to keep a very close control on the musical material. I'm not really worried whether a listener perceives the form or not. For me it is a stimulus to composition."

Buchanan: "Music has a plan, like architecture. It is important that the skeleton upon which it is hung is understood. Some people want the form to remain a mystery and don't want to understand while others want to be taken through the composition and have it explained."

Watson: "Form is the all important skeleton on which a piece is hung. The form is thought of first, as I couldn't start thinking in a vacuum. I would like a dedicated listener to get the general coherence of the piece, and the basic structure, on the first hearing."

Powell said he considered form to be one of the most important elements although it couldn't be separated out. In general formal ideas came early because he got a macroscopic picture. He might draw pictures and diagrams. If the piece were abstract music, he would think of the material and then the shape. If the piece were for drama, then the control for much of the planning was out of his hands. It was important, however, that some elements could be grasped at the first hearing. Formal aspects were important and he would build in details which might in fact not be heard, or would be very difficult to hear, for example, a canon. For him the architectural and formal elements of Beethoven were more interesting than the thematic ones. The structural elements were not just related to maths or pattern fun - he wanted it to be so that other people would want to hear it again.

Cousins: "I don't think about form consciously at all. I think it springs from what you are working with. It is different for each piece. I don't think it necessary for a person to be objectively aware of the structure. If the piece has any effect on the audience, then it will probably be in the form of logic; they might not realise that. If you are writing a song or something like that, you just don't think about structure at all. I look for the structure when the piece is finished. With an instrumental piece sometimes it is different - you start off with a plan but really the plan gets totally mutilated by the time you have finished."

Farquhar: "If people like a piece and therefore want to find out more about it, they discover its form and the way it is put together, but this is after the emotional impact has already hit them. Then they are more willing to go on to look at it." About his own pieces he said, "I certainly try and make shapes - I feel traditional about this, in the sense that I endeavour to have beginnings, and ends, and to make connections from one moment to the next. It is a question of balance between the two extremes - between that of monotony and unrelatedness - and there are so many possible balances. In a time such as the Viennese classical era where they had a fairly sophisticated audience who knew the styles and what to expect, people played around with formal things much more than before or since, because they were like a contemporary television audience, they knew the tricks and what to expect, and therefore they would spot the trick, and the playing around, and this made a lot of interest in music. We can't do anything as subtle as that today, I think, because nothing is expected apart from what is inherent in the idea itself." He said he wouldn't want a piece to make all its impact on one hearing, as he would like people to come back to it again. This had to do with structural relationships, for as one became more familiar with the piece, things became more apparent.

Question 4

How much do you think a listener can hear?

Lilburn said that he hadn't thought much about it but quoted Morris[1] who said "One can't hear more than three lines of counterpoint at one time clearly."

Cresswell said it depended on the piece. "On the first hearing I gain a general impression. Only after that do I start separating things out in the piece - unless it is something that is fairly obvious like a fugue. Some people hear more than others."

Powell: "In counterpoint you can probably sample three lines and if there are four lines you could be aware of it; this is probably a vertical activity."

---

1 R. O. Morris wrote several textbooks on counterpoint and harmony.

Rimmer: "I am sure the human mind can hear several things at once. In musical terms I think a good listener could hear four part counterpoint without too much trouble. This means that anything like a four part fugue, where you have obvious points of indication should be clearly perceived by a good listener. A further stage of development is where you have several different layers of sound, such as you have in the 'Rite of Spring'. Here you might have for example, fifteen different rhythms going on at once but you do not count up the fifteen. The thing in listening is to grasp the big contrast that you get in contemporary music. This contrast is between complex textures which are offset by very simple sparse ones. I think a good listener ought to be able to hear several strands at once. You could concentrate on one or two lines, but I also think you could switch to the extent of focussing your attention on the relationship between several lines. I see a difference between listening to one thing at a time and listening to or perceiving four or five things altogether."

Buchanan quoted Boulez as saying that a person could hear two parts simultaneously. Some listeners had greater ability than others and some had a psychological hearing which was not a sampling technique but was intuitive. This special hearing involved knowing the combinations of sound at any moment. She went on to say, "I think not all composers have had this gift. Mozart, Schubert and Bartok had it - not Beethoven."

Norman: "The listener is physiologically (as I understand it) capable of hearing everything. Aural perception is unlike visual perception where perception is limited to under 180°. However, to hear everything all the time demands an intense concentration (more than in artforms where no temporal dimension is involved) and this under normal circumstances is usually impossible. Like the novelist, I would hope the listener/reader, concentrated sufficiently to piece together the work as a whole."

Question 5.

What do you think about the supplying of programme notes and other such aids for listeners?

Lilburn said that what he was prepared to put in a programme note would "depend on the occasion. For a normal concert programme this would not be very much, because this can be a great bore."

McLeod thought that if you tried to prepare listeners to get the most out of a piece of music, you had to do it in very general terms. She was not sure that being able to recognise that a particular section of the music had a particular character was very important. "I frankly never found it rewarding to register form, but what I did find rewarding after many years, was to understand the language. I think the contemporary composer falls down because his language is not sufficiently defined. If you could say what the process was, it would be far more rewarding. It is hard to put yourself in the situation of somebody who does not compose themselves - who is just a kind of receptor."

Cresswell: "I don't really like writing programme notes - I'd rather somebody did it for me. Sometimes I feel I have something to say about a composition of mine - sometimes I don't. I find that some record covers of contemporary music have terribly intellectual discussions of the music which really put me off." He would be in favour of someone close to the composer writing some brief comment that would help to set the right expectations in listeners. "I think it is dangerous for the composer to do it because he knows exactly what's happening in it and for this reason may have unreal expectations." He would like to have the notes written by somebody who was good at setting up bridges, for the notes were meant to be some kind of bridge. "In a programme note it could be put in that noises are likely to be produced in ways that they don't expect. I think they should be prepared to take any sounds, however they are created - even if produced by hitting the strings on a piano. The people who get upset about such things worry me a bit." He would be happy to have visual help on the programme notes, lines, blocks and so on. A film on a screen would be especially good with an electronic piece.

Rimmer: "If only some programme notes would say, 'My music sounds like this', and draw a diagram of it. The diagram might have some sort of time scale; it might indicate the climaxes in the piece; it might indicate the density of various sound events; it might indicate particular tone colours used as well. Something like this is far more admirable than trying to explain it in words. The composer could set the limits of a piece in the programme notes or as an introduction on a radio programme. This would clear up a lot of misconceptions about a composer's work. This would be more useful than letting

someone with nineteenth-century ears loose on it making subjective comments, (comments like 'some of these sounds are ugly') which show a complete lack of understanding. There are objective criteria that we can talk about, and this is the way it should be done."

Bibby would give an explanation of how her pieces came about and in the piece Aiae! for example, would mention that the first and last sections were parallel. Depending on the circumstances she might give help describing the use of the vowel sounds.

Cousins had difficulty in writing programme notes because while he might think that he had written something quite specific and clear, others didn't think he had. It could be useful if three or four analogies were used - using symbols that the audience could understand. He would put in a programme note a comment, as unambiguously as possible, as to whether the piece was basically a pulse piece, a colour piece or a rhythm piece. The audience should be told of the basic idiom, tonal or not. The description should be kept basic, using a common vocabulary, or it could use visual art, for example environmental structures to illustrate the basic concepts. Things which were familiar to the audience involved should be used, for example sounds in a piece were a community of relationships.

Powell: "Visual pictures on a programme could explain a lot. You have to take care that you don't spoil pieces for other people by comments made or gimmicks, for example words used to highlight themes and so on. There is tremendous benefit if the performer can relate to the audience and explain the circumstances of the piece. A programme note could give information about aspects of the music, for example in a drama piece in which so many other things were happening, the music could be overlooked. For example, it could be explained that plain song tunes were used in music for a play about 1066. These programme notes if more extensive could be studied at home later."

Speirs: "I think people have got to be prepared to experiment very much with their attempts to describe contemporary music to the listener, and be very imaginative about it and to forget, if necessary, any traditional concepts of analysing or describing talking about music, and to forget about the critics. I can imagine people being in a complete quandary as to how to listen to something new, but I think ideas outside the music can help. Good notes are helpful but are usually few and far between. I do like to write my own, but good

notes are difficult to write because they must deal with the facts of the piece rather than with the fancies of the writer. Tovey's programme notes Essays in musical analysis are still for me admirable. They are the sort of note one could take away from the concert and use to review one's listening experience."

Buchanan said she wrote her own information for a programme note because it was important to give the listener a sporting chance and explain the nature of the symbolism, and how the instruments were used, i.e. the raison d'être. For other people's compositions, notes should place the pieces in terms of history. This should outline the hallmarks of that person's work in a historical perspective.

McDonald said he tried to give an explanation in a programme note and was happy to do so. He would usually give the intention of the piece so as to foster good attitudes towards it. To describe sound in terms of visual events might be very helpful.

Norman: "I do not as a general rule condone programme notes, unless they provide a background to the work or to the composer. It is rather like reading a library book in which a previous reader has underlined what he considers to be the important points. One ends up reading the previous reader's interpretation of the book, not the author's version.

"There is only one thing worse to be encountered in a programme and that is notes on the work by the composer himself. Inevitably the composer will view his work in a different light to everyone else, and all his notes will do, is direct the listener towards what the composer thinks he put into the work, not what the audience can expect to get out of it. Far better be it for the composer to leave the listener to draw his own conclusions."

Question 6

What difficulties do you as a composer see in listening to contemporary music and have you any suggestions to help listeners?

Lilburn, speaking about electronic music said, "I think the first thing listeners have to do is to get a bit familiar with the language, before they can hope to make much assessment of it as a medium. But if they are pretty skilled in listening to conventional music, then there is no reason why a lot of those habits should not be carried over in listening to an electronic piece. You have the same sense of whether

it's a cohesive piece, or whether it's a scattered piece. What you have to do is to ask your listener to accept another kind of convention of listening. If he's conditioned to a piece as a consecutive event in time, then he's going to be baffled if the piece doesn't move in time. Composition is at the moment, a very personal activity. I don't see any way around this, except to keep an open mind and an open pair of ears as far as possible. People need to listen as intelligently and as sympathetically as possible and to try to relate one's experience to similar experiences or utterly unrelated ones. It is helpful to know something about the composer's background and his intentions. As well as traditional ear training, which does help I'm sure, what would help enormously would be the kind of training people get in a Kodaly system - from learning folk song, folk rhythm, at a pretty early age. I'm sure this gives some sort of basic musical grasp of music materials. The "ear test" training is good for professional musicians but I wouldn't want to inflict it on anybody else! It is important to concentrate on a certain piece and listen with acute sensitivity - to be aware that they are listening to particular instruments, for example violins or trumpets, not just a generalized sound. Also to be aware that they are listening to something which uses material, possibly in a characteristic way - it may be developed, it may be non-developmental, it may be serial or diatonic, or anything of this kind. It is important to learn to try to memorize things that happen early in a piece, because these are very often the sort of source ideas for the rest of the piece. If you miss that, you are very often at a loss to know what the composer is doing later on. This concentration could be stimulated just by making the student aware of so many aspects of orchestral colour or design."

Speirs said, "I think you've got to forget entirely the traditional description of art and the artist. I think it is very important to be able to take away some impression - a particular sort of excitement that you can recollect later, and identify with this particular work.

"Orchestras, conductors, educationalists, sponsors - all fail in their duty to accept new music as a living commentary (in artistic, spiritual terms) on contemporary culture. A major orchestra exists only because we all pay lip service to the necessity of culture in our society, and because it must continue to exist, it needs money. Therefore the accepted well worn is rehashed, the box office determines their work. Apart from a few foundations dedicated to contemporary music sponsor-

ship, it is a business function not an artistic one. Apart from isolated examples, educationalists do little to direct the young towards living music. The main hope lies in education.

"I find electronic music still too undeveloped - too experimental to make any adequate comment. But it worries me that the possibilities for creating 'pure shape' in sound, will limit its power of communication to the initiated few. I'm not saying that 'pure shape' is invalid - it is artistically elitist."

Cresswell: "Well, some people just haven't had enough contemporary music. This is the main problem why people don't enjoy it and they don't make the effort to listen to it. I don't think its the sort of sounds and rhythms that are the problem, if people actually listened - it is more the attitude -- not being ready to give the contemporary music a fair go. It is important that there be something memorable, like a repeated rhythmic fragment. It is important to be open minded. Don't judge a piece on one hearing, but try to listen to it in the same way as you would listen to something like Beethoven, Brahms or Schubert. Don't just listen to tunes and things, but listen to sounds all around you and to relate these to other sounds. It is necessary to give the music a chance and listen to several other things and not just toss a piece away, because you don't like it, on one hearing. It is important to give yourself a chance to develop listening skills."

Body: "A lot of contemporary music should be listened to as being physical or emotional gestures." He would want to reassure listeners that "there is mathematical logic behind a piece of Boulez. The listener has to listen differently, in-so-far as there is no tune to follow, no harmony to follow, but there are rhythms. There is melody in quite a lot of contemporary music but not melody you can sing. There is pressure from outside, to accept the values or tasks of the particular class you are identified with and pressures from inside. One has to be human, has to be open and respond and say either I respond to that piece, I understand that piece or I don't understand, or it means nothing to me, I'm afraid. One's personality is changing all the time. It is important to remain as open as possible, listen to sounds in a physical sense - see them as colour. People must be more sensuous, more sexual, more passionate, more imaginative, more physical when they listen to music."

McDonald: "It depends on the attitude or interest towards new music. People need to be open to receive what is coming. The difficulty with some contemporary music is the total serialisation which is not recognisable, as an auditory effect. The big thing is to have opportunities to listen.

"It could be possible to show the score to people or examples of it, perhaps pages of the score in a programme, or around the foyer. But some people do not want to do preparation for pieces. Specific dislikes about a piece should be discussed and then they can go on from there. With new music, as with a new language, you only pick up fragments that have any meaning for you, at the start. Ideally, people go away from a concert being different because they have had an experience - and perhaps they might take a part of the piece away with them as a preparation to appreciating much more of the piece, and being sensitive to all the other details. It is useful to have plenty of talk about the concepts, for example, chaos and order, and it helps to apply the right criteria to pieces."

Watson: "People don't listen enough - they are not professional listeners - possibly the difficulties arise because of the apparent shapelessness. The listeners find it has little form, tune or rhythm. It is important to let younger people hear contemporary music so they can get used to it. As much as possible, one should try to listen to all styles. If you were to judge contemporary music by the rules of the 19th century you would say it was bad."

Bibby: "For best effects the listener needs to be in a comfortable body position, with closed eyes or controlled focus. A listener needs to have total involvement." As an aid to concentration she might use a visual focus laser beam or a light. "Be ready to concentrate and do not expect melody, rhythm, or instrumental-based formal patterns. Be prepared for anything."

Cousins: "People need a listening background and a perspective. So much depends on whether people in the audience want to be helped to understand. Ninety percent of New Zealanders don't want to be helped. Ideally, the audience would make progress in the way they listen, like the composer makes progress in the way he composes. They don't need to understand a piece of music, it is enough to be moved by it. The job of understanding and going right to the bottom of the relationship is the job of the specialist. If you realise that music is just sound

and that all you need for the music is sound and time for the sound to exist in, then all that is necessary is for somebody to come along and make relationships with the sounds. You must set up a chain - the first sound, the second sound related to the first, or a new one and so on creating repetition and variation. If a piece is of sounds in relationship then you have to be aware of what is being related, for example, is it a colour piece, or is it a pulse piece, and so on. If you can't hear the relationships then your ears aren't good enough. The listener is not just a receptor, but is an interpreter and needs to have ears trained to make relationships. If you know that the piece is by Stockhausen, then you click into the texture channel and make relationships like that. If you are listening to Larghetti then you should click into the texture channel, but have a finer frequency. If it is Beethoven - a motive and key channel, and so on. You need to have a common vocabulary to describe music. If you like the piece then there is no problem, you can go on discovering, but if you don't like the piece, then you need to persevere and make a positive effort to try to make sense of it. A piece of music is like code - if you find the key you get the secret message and can translate it. You should first work out what is the most important thing; let the ear decide, is it a key piece? a colour piece? a rhythm piece? and so on. You should work from this outwards, scrapping away to discover all the relationships. The audience should do this. After the first description you should work out into the main relationships."

Powell: "If you are wanting to get to know a new piece, then clearly it is going to be an effort - some understanding needs to go into it. The composer's intentions are important, but not all composers are able to express them. Open mindedness is crucial. There are two types of music, serious and entertainment - a large proportion of people think only of entertainment music. Serious music is more important, because it is trying to say something and so you need to accept that it is music which is not trying to entertain, and that what it is trying to say can't be said in words. It is necessary to accept a depth dimension of our own personalities. You have to open yourself, and explore, and try to get to know yourself."

Rimmer: "I believe that if you can give someone something to listen for, you have supplied several anchor points through a piece. If you could listen to a piece ten times, you would begin to know it. When our memory takes over, we recognise things we have heard before, and we can

comprehend. This is the whole business of understanding - it occurs when your memory is sparked off, when you comprehend something and you sense a relationship between some things. It is good to focus the attention on a specific element in a piece. If you just say 'listen' it goes in one ear and out the other; but if you say 'listen for a particular event, or instrument, or chord' and say 'put your hand up when you hear it,' you have achieved your point. I think that the difficulty is often that we say, 'what do you hear now?' and the person has trouble explaining. It is better to say 'this is a trumpet, and in this piece I want you to put your hand up when you hear it'; then you've got them straining to hear something particular. This same listening approach can be applied to practically any element, but it has to do with making the task a very specific one. Listeners to electronic music can make certain problems for themselves by endeavouring to hear things in the music that are not there at all. In the twentieth-century we have seen increasingly more emphasis on rhythm, tone colour and texture to the detriment of harmony and melody. (This is a broad generalization and doesn't happen all the time). As a suggestion I would say, 'listen to a little of a piece, say to one minute of it and then listen to that minute again for quite a few times. Don't be worried about listening to the whole right through and trying to grasp it quickly'. That is the only way to get into composers like Schoenberg and Boulez."

Buchanan: "If you want to be able to have some feed-back it is important to be able to establish a repertoire of words for a response, and establish categories. Practise listening to different aspects of the craft - break down tension and reawaken the imagination - keep on practising. People may need help in listening to abstract music. You may be able to help by talking of architectural plans, or the background to the piece, or the country and time of composition. If something about the composer interests you, then you will listen. Set a task - for example you could graph something from the piece. It is useful to practise some of the aspects so as to have experience of them, for example, a rondo."

Norman: "The first and foremost difficulty is an absence of familiarity with the idiom. Absolute music by its very definition is an abstract art form in that there is nothing in the music for the listener to identify with in the 'concrete world'. In contemporary music the

listener is confronted with unfamiliar terrain without a compass so to speak."

Question 7

What practical suggestions have you to encourage good listening?

Cousins: "The audience has to make an act of faith and work hard, but they need to be open minded. Because of the difficulty in using words, it is best to 'do' things in the classroom and thus rub up against sounds. It is best to plunge headlong into making sounds. Then it is possible to begin to evaluate the sounds to see whether they work or not."

Farquhar: "You can't generalize about listeners and their difficulties, for example some of the young like awfully loud noises and others get upset by excessive volume. You should start from what you like, and lead on from there. You try to discover more about the things you like - perhaps get a book from the library. It is important to start from some positive point, something one likes and then pick up bits from here and there, things that make connections with you and musical connections within the piece itself."

McLeod: "I think it is important for the average person to realise that his aesthetic principles may not be the same as the next person's. Mostly you have to read something about the other composer's processes to discover what they are - even Stockhausen takes much listening over and over, to hear aurally what he says he is doing - if you hadn't read the writing it would take years longer.

"For people who don't know how to start listening, I would start by saying, give them as much as they can cope with - just the physical side. Listen to the sounds, do you like the sounds? What kind of sounds are they? Could you describe them? Perhaps listen to the shapes, what happens? Could you shut your eyes and visualize the sounds? Is it a wide spread?

"One of the main difficulties with contemporary music is that there is nothing to hang on to. I think any good Western piece is memorable in some way or another - I don't mean by that, that there is a tune that you can sing. This is partly the fault of what most people come to think about music, that if there is a tune you cannot remember, it isn't music. If one can extend the idea of memorability to events which are particularly characterised by particular things - great big

chords, piercing sounds or these sorts of things, then I think that it should be memorable. We must also accept that a great deal of music written today is not particularly marvellous. Familiarity breeds affection the less value judgements have anything to do with it. Like a family - you may know them so well but you still like them! A difficulty with twentieth-century music is that people won't stay with it long enough to have it 'as family'.

"Ever since the Middle Ages listening has been branching out like a tree, and the question now is, how much audience has that little twig out there?"

Buchanan: "People have opted out of so much listening and so they do need practice. They need to know how much they are missing and what their own weaknesses are. To improve attention a programme element could be used or a task set, for example, to graph an aspect of the music. The listening should be related to the craft aspects. Listening to music can be heightened because of making one's own."

Bibby uses a visual focus to help concentration. She would use a spot-light on the edge of a curtain and this would move a little in the draught providing a focus, or else she might use three spots which change in response to the music, or have slides, using several machines, perhaps computer controlled, producing visual patterns on the front from one side to the other, or on the ceiling and so on. Another visual focus is the use of a laser beam which has several different colours and these can be controlled to react to melody, pitch, intensity, dynamics and so on. These are aids to concentration because they help to produce a total involvement.

McDonald thinks of the total experience in music and says that it is necessary to use the eyes as well as the ears. To help with this he would get the players to dress up and perhaps even move during a performance producing spatial changes.

Norman: "Hear as much of it as possible and search for landmarks you can identify with. If you find a work unapproachable, try forcing yourself to listen to a work which is even more unapproachable. This will help a 'stretching of the ears', and when you approach the first work, it will sound less daunting.

"Above all, approach contemporary music with an open mind and be aware that the boundaries of music are extremely broad."

Question 8

Do you think in terms of communication of message in your compositions? What is the place of words in such communication?

Lilburn: "The communication side of music is very difficult ground these days. I think there is a place for every kind of music, both with and without words - music with words would possibly have a more direct way of communicating than abstract sound. I think an abstract language is for the purpose of bringing out in ourselves, the deep things about ourselves and humanity - as more immediate language, like words, cannot always do. A really successful work is one in which people are concerned with the deep issues of life. At times I'm quite conscious of trying to say something, conscious that I put it in this language because I can't put it in any other. In a sense it is possibly a bit like a parable which should be understandable at various levels. It shouldn't necessarily arouse the same response in various listeners, but it should arouse the equivalent responses. If a passage is poignant for instance, it is likely to remind people not of the composer's experience, but of some equivalent experience of their own."

Cresswell: "I don't feel that I have any great profound thoughts that I have to communicate to the world. I just want people to enjoy my music. The only thing I can try to communicate, I suppose, is the pleasure I get out of writing."

McLeod: "I use words because of the breakup of the hierarchy of general music. Everyone has gradually branched out in their own ways and in using words I have become more and more interested in words. It gives people something more to hang on to - at least you can communicate; this is why I get so jealous of poets and painters, because they have readily accessible material. No wonder we lose communication. We've developed this notion that the purest and highest sort of music, is that which is divorced from anything else."

Body: "If you talk about communication, one immediately thinks of language, verbal language, and in a way perhaps the only way you can talk about music is by writing it. I do use words, it's an aid, something to latch on to, to suggest images. If you are setting a song, you know how long it's going to be. But I think it is dangerous - because I think it is too easy, too cheap, to latch on to the meanings of words. I mistrust words, especially spoken words, unless they are

distorted, unless they become made just as music. Music is so abstract that it should remain there. You can put your finger on it but you can't talk about meaning. I'm happy for it to remain a mystery. It's a mystery how it affects us. But one does get the feeling listening to Bach, that there's the whole of the potential of mankind, beauty and anguish, in this music, that couldn't be expressed in words."

McDonald: "One knows partly what one is communicating, but there are always elements that you don't know about." He tries to communicate his strong feeling that people are important and he hopes that when people listen they become aware of their importance and become involved with eternal issues, for example, humanity. He uses words about half the time, but is more concerned with the use of the human voice essentially as an instrument, and uses it in all ways, sung, shouted laughed, wept and so on. "The human voice is the best instrument there is, and people can identify with it."

Cousins: "I'm not really interested in communication at all. Composition seems to be to me, a process of making clear to myself things which I can't put into words. It is a matter of finding some solution to something, in terms of sound. And the solution only occurs to me. It's my problem, and I solve it, and so the audience is in a position of seeing all sorts of things which I don't see because they are not me and are looking at it from a different point of view. I think the audience is lucky when words are used because they can have the words themselves beforehand. However, it may be that you can't use words in the old way anymore, but you use them as vowels and consonants and so on. I find that the songs, so called, that I write, become instrumental pieces. The voice is just another instrument. It can make noises in all sorts of nuances that you can't get in any other instrument."

Rimmer: "Music is an abstract art. For me music has no meaning beyond itself. I don't think the word 'meaning' ought to be used. I prefer the word 'acceptance'. One accepts certain sounds but they don't necessarily become meaningful. You use these sounds several times, rejoice in these sounds, so you perhaps want to explore where they are going. I certainly don't look on my music as communicating specific ideas at all; in fact I'd be horrified if anyone wrote a programme note about one of my pieces. With music using a text,

you've got some sort of communication by way of words, you are faced either with being very faithful to the text and letting the meaning of the words come over clearly, or you can turn the poetry into music by dwelling on the actual sound quality of the words, and make a piece of music out of it."

Watson: "If you are dealing with words then these are the message, and this is heightened by the music." He didn't think anything specific could be communicated in abstract music, although various feelings and emotions can be communicated.

Powell: "With music for drama productions, the dramatic situation is enhanced and this is, in some sense, communication. With non-stage works one is trying to say something which is not able to be said with words. Successful composer works, coincide with feelings that you have had, or stimulate you, or else it is something that rings true."

Bibby said she wouldn't try to communicate a particular emotion, but she hopes it shows how a piece affects you or your ideas. She doesn't like "political" music, that is, music with a message because she feels the music is left behind in the process, and she doesn't like the idea of being manipulated that way. She expects to meet other's ideas, but doesn't expect to meet propaganda, as this is emotional blackmail. "You can't demand that people join another world."

Buchanan, makes a deliberate effort to set words clearly so that they cannot be missed. Words and music enhance each other. Communication occurs on all levels. She does write abstract music and feels that there is no music without communication - it is an extension of language, it is more articulate and you need empathy to make the total relationship. Music without words, is as it were a song without words. She uses words and the voice in different ways not always conventionally.

Norman: "No, I do not think in terms of communicating at all. Music seeks to express or convey that which cannot be expressed or conveyed in words. At worst it provides an aural image or images, at best it induces and heightens emotional responses in the listener. The most trite sound track to a film conveys a message only by its having been conventionalised by associations which have long been established in

particular styles of conventional music. In composing songs, one can either view the object of the music as being to enhance the words, or vice versa, or to attempt to inseparably fuse the words and music to produce a work that hovers in the twilight world of half abstract, half concrete. I tend towards the latter except where certain external conditions necessitate the former."

See Appendix H for some details about these composers' works p.265.

APPENDIX H

REPRESENTATIVE WORKS AND BIOGRAPHICAL DETAILS OF COMPOSERS INTERVIEWED

Gillian Bibby b 1945. After University study in New Zealand, studied composition in several European countries. Returned to New Zealand in 1976; Mozart Fellow at the University of Otago 1976-77. Currently a tutor at Wellington Polytechnic and freelance composer. Recognises her compositions from 1970. Compositions are written for a variety of instrumental groups for a variety of occasions including -

1970 Sanctuary of Spirits (text: Alistair Campbell) children's opera. - 40'

1972 Musik fur drei und einige Horer. (music for three and sundry listeners) for electric clavichord, amplified voice, drums and electronically modified antique cymbals and bamboo wind chimes. - 41'

1973 Amongst - chamber orchestra-12'

1975 AIAE! A conversation piece - tape-18'

1975 Five Miniatures - piano.

1976 Lest you be my enemy - a ballet for tape-6'

1977 Fanfares for Macbeth incidental music commissioned by Fortune Theatre Dunedin. 2 tapes-40'

1978 You Can't Kiss the Tummy of a Caged Lion:Pavane pour un genre de'funt Commissioned by Radio New Zealand (RNZ) for International Music Day 1978-15'

1979 In Memoriam 8 part choir, organ, percussion-12' - commissioned by Phoenix choir for centennial of St. Peter's Church, Wellington.

Jack Body b 1944. After University study and Teacher's College taught for a year then time in Europe before returning to free-lance composing and teaching in New Zealand. Had some time in Bali and Indonesia before a year of overseas travel in 1978 before returning to freelance composing and teaching in New Zealand. Currently lecturer in composition at Victoria University of Wellington.

The earliest piece he recognises is his 1963 piece for tenor and piano, The Loaded Sky.

1965 People Look East for Soprano, Alto, Tenor, Bass (SATB).

1966 Variations for chamber orchestra.

1968 Four Stabiles piano.

1969 Playback - tape 3 performers.
The Stations of the Cross - tape-25'

1970 It happens to the best of us - dancers, actors, tape, percussion. 8'20"

1971 23 Pages - Large orchestra - commissioned by New Zealand Broadcasting Corporation (NZBC)-17'

1972 Sexus 6 dancers, 3 sound tracks, 2 films -30'

1972 Superimpositions computer music for piano - 11'

1974 Close to Home incidental music for TV.

1975 Musik Dari Jalan - tape 1976 Winning entry Bourges Competition for electronic music.

1976 Marvel not Joseph - tenor and alto solo with SATB commissioned by BBC.

1978 Make Us Merry with Canons for Brass. 3 male voices with 3 trumpets, 3 trombones c 9'

1979 Bamboo Music for Eight players - 8 musicians playing bamboo instruments - Commissioned by the Environment Conservation Organisation. c 20'

1979 The Caves of Ellora - piano, brass ensemble, Commissioned by RNZ for International Music Day 1979.

Dorothy Quita Buchanan b 1945. After University study, free lance composer and teacher, attended Teachers College 1975. Appointed first New Zealand Composer-in-school, 1976. Has written many songs for different combinations of voices, many pieces are religious.
First pieces recognised in 1965.

1965 The Mercy Motto SSA

1966 A Hymn to the Virgin - soprano and piano-3'

1966 Songs of Wind and Moon - soprano or tenor, string orchestra-10'

1967 Fantasy - Sonatine - solo cello - 10'

1968 Five Pieces - solo bassoon - 12'

1970 Computer Quartet - string quartet - 8'

1970 Solo sonata for viola - 6'

1970 Song of St. Francis-SATB, soloists, organ - 4'

1971 Mass of St. Peter of the Way - congregational - 10'

1971 Toad of Toad Hall - Theatre piece - chamber group, voices, (published).

1972 Peace Song - voice(s) piano.

1973 An Easter Hymn

1975 Amazon Grace - Or the truth about the Amazons - opera, piano, score and parts-90'

1976 Colours - chamber orchestra-9'

1976 Five Witchy Poo Songs - voice, piano-6' (published).

1976 Hinemoa and Tutaneki - operetta-60'

1977 Breath of Life (music for film).

1977 Sonata - violin, piano-10'

1978 The Lord's My Shepherd - choir, piano or orchestra-2'30" (published).

1979 Farewell music, violin, piano (for Ruth Pearl and Dobbs Franks)-3'

1979 Missa de Angelis: Pro Anno Infantum 1979 - 15'
Commissioned by New Zealand Symphony Orchestra (NZSO) for New Zealand Youth Orchestra.

1980 Duo Concertante - trumpet, trombone, strings - 8'

John Edward Cousins b 1943. After University training, attended Teachers' Training College then appointed to lecturing position at School of Music University of Canterbury, currently Director of Electronic Music Studies. Has travelled overseas 1973, 1979-80. He has revised several of his earlier pieces and deleted some earlier pieces.

1967 Five Stanzas SSATTBB 6' revised (rev) 1977.

1968 The Reason Why - voice, strings-7' rev 1977.

1971 Dulce e Decorum est Pro Patria Mon - baritone, full orchestra - 15' - rev 1976.

1973 Christmas Music - performance installation work - mixed media.

1975 Anna tape-12'

1977 Performance of Co-Active Play activities at National Dance Festival.

1978 Cube Study - performance installation work mixed media.

1978 Wouldn't You Say? tape-12'

Lyell Richard Cresswell b 1944. After University education and overseas study, teaching and working at Glasgow University.

1968 Piece for Four Pianos.

1969 The Birds is Coming - tape.

1970 Octet

1970-1 Concerto - for 2 orchestras.

1971 Jubilate Deo - choir, strings, flute, guitar, bagpipes, percussion.

1973 Landes Regine - small orchestra.

1973 Universi, qui te exspectant - choir, soprano, brass, orchestra.

1974 In Memoriam Norman Kirk - horn, narrator.

1975 Serialism with a Conscience - piano.

1976 Eye Music - flute/visual music.

1977 Salm - orchestra.

1977 The Slaughter of the Innocents - cantata for school performance.

1978 The Twin Peaked Mountain of Mass - cello.

1979 Chorus of the Stones - instruments and tape.

1979 Waiata Tangi - trumpet, violin, double bass.

David Andross Farquhar b 1928. After University training taught briefly, overseas experience, appointed to the staff of the Music Department at Victoria University of Wellington where currently the Professor. Has written wide variety of pieces.

1940-5 Early Songs - voice and piano.

1948 Variations for strings

1950 Two Songs - male voices, percussion.

1951 Arrangements and Transcriptions of Works by Stravinsky

1951 Serenade - wind quartet - 12'

1953 Ring Round the Moon - Incidental Music for Anouilh's play "L'Invitation au chateau" - New Zealand Players production.

1955 Oedipus Rex - music Victoria University of Wellington (VUW) Drama Club production.

1957 Prelude and Fugue for organ.

1958 In Despite of Death - song cycle for baritone and piano-15'

1958 Road Safety Film - voice, guitar.

1960 Divertiments - brass - 9'.

1960 King Lear - incidental music for NZBC production.

1961 Anniversary Duets

1961 Elegy - string orchestra.

1962 A Unicorn for Christmas - 3 act opera, 10 singers, children's chorus, orchestra - libretto Ngaio Marsh.

1965 Happy Birthday Fanfare for Chamber Music Society, Small Orchestra and piano duet.

1966 Suite - guitar-9'

1967 Concerto - wind quintet.

1967 Three of a Kind - Nursery Rhyme arranged SATB.

1968 Repercussion - Ballet music for flute (picc.), percussion-15' - commissioned by New Zealand Ballet Company.

1969 Oh Captain Cook! Musical based on Giradoux play - soloists, chorus, guitar, harmonium - 120' - commissioned by Downstage Wellington.

1972 Inside-Out - piano duet, 2 percussion -10'

1974 Bells in Their Seasons - Double choir and orchestra - Commissioned by Royal Christchurch Musical Society.

1975 Ostinato for Gamelan - 4'

1977 Telephonics - set of 9 piano pieces based on telephone numbers of Music Department colleagues.

1978 Four Socratic Dialogues - duets for 2 guitars.

1979 Recessional - 3 trumpets, SATB Organ-7' - commissioned by VUW for use in graduation ceremonies.

Douglas Gordon Lilburn b 1915. After University training in New Zealand, overseas study, returned to New Zealand 1940, conductor, critic, freelance composing. 1947 part-time tutor VUW, full-time 1949, retired 1980. Founder and director of Electronic Music Studio at VUW. Overseas travel 1955-6, 1963, 1969, 1974.

1932 Opus 1 - piano sonata.

1936 Forest - tone poem for orchestra.

1939 Prodigal Country - for baritone, chorus and orchestra.

1940 'Aotearoa' Overture - orchestra.

1942 Landfall in Unknown Seas - strings, narrator.

1943 Hamlet - incidental music for Shakespeare's play - University of Canterbury Drama Society - 3 violins, tubular bell.

1945 String Trio - 20' (published).

1947 Backblocks Hospital - Incidental music for National Film Unit Documentary.

1948 The Islands - voice, piano.

1949 Symphony No. 1 for orchestra.

1953 Sings Harry - baritone and piano -10'

1954-5 Suite for Solo Viola

1956 A Birthday Offering - commissioned by NZSO for its tenth birthday.

1957 Wind Quintet - 10'

1958 Three Songs for Baritone and Viola

1959 Suite for Brass Band - 4 movements.

1965-6 Nine Short Pieces for Piano.

1967 He Mana Toa - Maori Theatre Trust Production.

1967 Poem in Time of War - tape -15'

1974 Welcome Stranger - ballet commissioned by the New Zealand Ballet Company - 26'

1979 Soundscape with Lake and River - tape.

Ian Donald McDonald b. 1937.

After University training - freelance composer.

1963 . Imitations - seven period pieces for piano - 9'

1963 The Old Times are Gone - blues for jazz group.

1967 Six Contrapuntal Studies

1968 Collages for Sunday Morning - tape.

1968 Wild September Snow - Incidental music for film by John King rock group, tape National Film Unit - 19'

1969 Madman and the Nun - incidental music for play by Witcasey, violin, tape - 33' - commissioned by Massey University Drama Club.

1969 Sea Life - tape - incidental music for reading of story by Bill Owen - commissioned NZBC - 12'

1970 Embryo - tape for musical, group creation, commissioned VUW Students Association-14'

1970 Photomusic II for 2 magnetic tapes driving stereo speakers and colour organ - 6' - commissioned NZBC.

1971 If You're In It, You're In It - rock group - incidental music for TV documentary by John Charles - 16' - commissioned NZBC

1971 Music for a Corridor - tape music for "Collusions" a mixed media work by Gil Peterson -75' - commissioned VUW Students Association.

1971 Steel from Sand - percussion tape, incidental music for film by Rupert Glover - 6' - commissioned National Film Unit.

1973 Kea Country - tape - 5'25"

1978 Sounds of Dunedin - bassoon, clarinet, synthesiser.

Jennifer Helen McLeod b 1941.

After University training, overseas composition experience. Returned New Zealand 1966 to lecture in music at VUW, 1976 resigned.

1961 Suite - piano.

1962 Cambridge Suite - chamber orchestra - 13'

1963 Four Profiles - cello.

1963-4 String Trio - 20'28"

1964 Metamorphosis - violin, piano.

1964 Oh What a Proud Dream Horse - choir, wind quartet, horn, trumpet, percussion.

1968 Earth and Sky - music theatre - 90'

Philip Thomas Norman b 1953

After University training, attended Teachers college. Currently further University study, composing and conducting.

1968 Pieces - piano.

1970 The Golden Opportunity - comic operetta, 2 hours.

1970 Sonatina for Clarinet - clarinet, piano - 15'

1971 Hosanna - SATB, piano - 5'

1972 Ring Down the Curtain - cycle of piano pieces - 20'

1973 Pieces - flute, clarinet, piano - 10'

1975 Surrealist Landscape - SATB, flute, alto saxaphone, piano, double bass, drums - 5'

1976 Arrangement for Barbershop Quartet - TTBB - 7'

1976 A Stab in the Dark - comic operetta, Principals, SATB - divided into 3 choruses, drumset, piano, strings. Written for Canterbury University Musical Society (MUSOC) - 2 hours.

1977 Necrology: Minnie Dean - instrumental. Commissioned by Invercargill Sinfonia - 23'

1978 Jingles Set for Radio "U" TTBB-3'

1978-9 Apple Crumble - A medley of Beatles numbers for orchestra - 12' Commissioned by Christchurch School of Instrumental Music (CSIM).

1978-80 10 Jazz-like arrangements for choir - combinations of SATB for MUSOC singers.

1979 Till the Boys Come Home - arrangements of popular songs for a Court Theatre production written by Ken Hudson, SSA, piano.

Christopher (Kit) Bolland Powell b 1937.

After University and Teachers' College training, overseas travel and training, taught in secondary school and then at Secondary Teachers' College.

1960 Reading Jail - baritone and orchestra - c 15'

1962 Clarinet Quintet - c 20'

1963 Concerto for Violin and Orchestra - 20'

1964 Kuza Nama - song cycle for baritone and piano (based on Rubaiyat of Omar Kyam) - c 11'

1969 The Odyssey - total theatre.

1972 In Memoriam: Brian Barrett - brass band - 6'

1972 Palindrome for 5 orchestras (variable instrumentation) special percussion group - 4' - written for CSIM.

1976 Fisherman and His Wife - comic operetta, 2 soloists, SATB - 75'

1976 Stone Poem - wind quintet, 2 speakers, stones - 10'

1962-80 Four Carols on Four Notes - SATB - 6'

1980 Ever Circling Light - 4 choruses SATB with 6 percussion - commissioned by Royal Christchurch Musical Society - 25'

1980 Hubert the Clockmaker - commissioned by New Zealand Army Band with narrator - 10'

John Francis Rimmer b 1939.

After University and Teachers' College training, taught for 5 years before going overseas for further study. Returned to teach at Teachers' College. 1972 Mozart Fellow. Now lecturer at University of Auckland.

1964 Octet - 12'

1967 Dies Sanctificatus SATB - 5'

1968 Canzona per Elettronica Toni - tape - 6'

1970 Seven Summer Haiku - SA, piano, percussion - 11'

1971 Composition 5 percussion and electronic sounds - 11'

1971 Iconoclasm - brass band - 8'

1972 Fond Youth - 5 choirs, electronic music, dancers, orchestra - 40'

1974 The Exotic Circle - 6 recorders, percussion - 6'

1975 Epitaphium - solo violin - 8'

1976 The Juggler - music theatre work based on a thirteenth century French legend - treble, tenor, bass voices, male chorus, flexible instrumental ensemble including keyboards and recorders (treble, descant) - 30'

1978 For the Kokako - piano - 10'

1980 Viola Concerto - 23'

Jack W. M. Speirs b 1939

Education at Edinburgh University and post-graduate study. Currently Senior Lecturer in Music at University of Otago.

1970 Fioriture - for large orchestra - commissioned for the centenary of Otago University - 18'

1972 Three Poems of Janet Frame - tenor and 12 instrumentalists - c 13' - commissioned by NZBC.

1976 Metamorphoses - piano - c 5'

Anthony Arthur Watson. 1933-1973

After education, played the viola in the National Orchestra - was the first Mozart Fellow.

1959 String Quartet No. 1 - 20'30"

1960 Prelude and Allegro for strings - 6'25"

1965 Concert Piece - violin and piano - 7'25"

1969 Sonata for Solo Viola - 12'40"

1970 A Centennial Cantata for Balclutha - orchestra, choir.

1970 Incidental Music for Globe Theatre.

1971 In Memoriam - narrator, 4 trumpets, 8 cellos, timpani, percussion - 8'

1971 Three Bagatelles - violin, viola, cello, bassoon - 6'

The author is indebted to the Bibliography of New Zealand Compositions vol. 1 (1940-1980) compiled by Philip Norman for much of the information given here.

SELECTED BIBLIOGRAPHY

The works included below do not comprise an exhaustive bibliography but provide references to the material that contributed to the more significant ideas in this study. In addition it provides the reader with a representative guide to the literature which is most pertinent to the approaches adopted by the present investigation. Specific references are detailed in the footnotes to the main body of the text.

AJZEAN, I. and FISHBEIN, M. "Attitude - behaviour relations: a theoretical analysis and review of empirical research." Psychological Bulletin, 1977, vol.84, no.5, p.888-918.

ALBRECHT, S. L. and CARPENTER, K. E. "Attitudes as predictions of behavious versus behaviour intentions: a convergence of research traditions". Sociometry, vol.39, no.1, 1976. p.1-10.

ANDREWS, DOROTHY E. "The comparative study of two methods of developing music listening ability in elementary school children." Journal of Research in Music Education, vol.10, no.1, 1962.

ARY, Donald, JACOBS, Lucy Cheser, RAZAVIEH, Asghar, Introduction to research in education. New York, Holt, Rinehart and Winston, 1972. 378p.

BAILEY, Ben. "The development and validation of a test of listening skill." Journal of Research in Music Education, vol.16, no.1, 1968, p.59-63.

BAKER, Andrea Esther Charlotte. The formation of music preference: the relationship between certain personal status variables and aspects of music preference. Unpublished M.A. thesis, Canterbury, 1977. 175p.

BARBARA, D. A. The art of listening. Springfield, Illinois, Charles C. Thomas, 1966. 201p.

BARKER, L. L. Listening behaviour. Englewood Cliffs, New York, Prentice-Hall, 1971. 154p.

BENTLEY, Arnold. Musical ability in children and its measurement. London, Harrap, 1966. 151p.

BRADLEY, Ian L. "Repetition as a factor in development of musical preferences." Journal of Research in Music Education, vol.19, no.3, 1971. p.295-298.

BRADLEY, Ian L. "Effect on student musical preference of a listening program in contemporary art music." Journal of Research in Music Education, vol.20, no.3, 1972. p.344-353.

BROADBENT, Donald Eric and BROADBENT, M. H. P. "Recognition of words which cannot be recalled." Attention and Performance V. Ed. Rabbit and Dornic, London, Academic Press 1975. p.575-590.

BROCKLEHURST, J. Brian. Response to music: principles of music education. London, Routledge and Kegan Paul, 1971. 141p.

BURNEY, Charles. A general history of music from the earliest ages to the present period (1789), with critical and historical notes by Frank Mercer, vols 1 and 2, New York, Dover Publications, 1957.

CARLSEN, J. C. A cross-cultural study of perceptual expectancy: a measure of musical behaviour. Paper presented for Fifth International Seminar on Research in Music Education, Mexico City, 1975.

CERASO, J. "The interference theory of forgetting." Scientific American, vol.217, no.4, 1967. p.117-124.

CLARK, M. C. and MEREDITH, S. G. "Teaching to listen". Australian Council for Educational Research Quarterly Review of Australian Education, Dec. 1972. 50p.

COLWELL, Richard. The present state of research in music education studies in music, No. 7, 1973, University of Western Australia Press.

COPLAND, Aaron. What to listen for in music. Rev. ed. New York, McGraw-Hill, 1963. 192p.

CRITCHLEY, M. and HENSON, R. A. Eds. Music and the brain. London, Heinemann, 1977. (A collection of essays), 459p.

DAVIES, John B. "A new test of musical aptitude". British Journal of Psychology, vol.62, no.14, 1971. p.557-563.

DAVIES, John B. and YELLAND, Anne. Effects of two training procedures on the production of melodic contour, in short-term memory for tonal sequences. Psychology of Music, vol.5, no.2, 1977. p.3-9.

DELIS, D., FLEER, J. and KERR, N. "Memory for music." Perception and Psychophysics, vol.23, no.2, 1978. p.215-218.

DEUTSCH, Diana. "Facilitation by repetition in recognition memory for tonal pitch." Memory and Cognition, vol.3, no.3, 1975, p.263-266.

DEUTSCH, Diana. "Music recognition". Psychological Review, vol.73, no.3, 1969. p.300-307.

DEUTSCH, Diana. "Octave generalisation and tune recognition." Perception and Psychophysics, 1972. p.411-412.

DEUTSCH, Diana and J. A. "Attention: some theoretical considerations." Psychological Review, vol.70, no.1, 1963. p.80-90.

DEUTSCH, Diana and ROLL, P. L. "Mechanisms in processing tonal sequences." Journal of Experimental Psychology, vol.2, 1976. p.23-29.

DOWLING, W. Jay. "The perception of interleaved melodies." Cognitive Psychology, no.5, 1973. p.322-337.

DOWLING, W. Jay. "Recognition of melodic transformations, inversions, retrograde and retrograde inversion." Perception and Psychophysics, vol.12, no.5, 1972. p.417-421.

DOWLING, W. Jay. "Scale and contour: two components of a theory of memory for melodies." Psychological Review, vol.85, no.4, 1978. p.341-354.

DOWLING, W. Jay and FUJITANI, D. S. "Contour, interval and pitch recognition in memory for melodies." Journal of the Acoustical Society of America, vol.49, 1971. p.524-531.

DRAKE, R. M. Manual for the Drake Musical Aptitude Tests. 2nd ed., Chicago, Science Research Associates, 1957. 32p.

DUKER, Sam. Listening: readings. Compiled Sam Duker, New York and London, Scarecrow Press, 1966, vol.1, 475p. vol.2 394p.

DUKER, Sam. Teaching listening in the elementary school: readings. Compiled Sam Duker, Metuchen, New Jersey, Scarecrow Press, 1971. 383p.

EDWARDS, J. S. and CHRISTIAN, M. "A scale to measure attitudes toward music". Journal of Research in Music Education, vol.19, no.2, 1971. p.228-233.

ELLEY, Warwick B. and REID, N. A. Progressive Achievement Tests: Teachers' Manual. New Zealand Council for Educational Research, Whitcombe and Tombs, 1971.

FARNSWORTH, Paul Randolph. The social psychology of music. 2nd ed. Iowa State University Press, 1969. 298p.

FISHER, Ronald Aymer and YATES, Frank. Statistical tables for biological agricultural and medical research, Edinburgh, Oliver and Boyd, 1970. 146p.

GARDNER, H. "Children's duplication of rhythmic patterns." Journal of Research in Music Education, vol.19, no.3, 1971. p.355-360.

GARDNER, H. The shattered mind: the person after brain damage. London, Routledge and Kegan Paul, 1974.

GETZ, R. P. "The effects of repetition on listening response". Journal of Research in Music Education, vol.14, no.3, 1966. p.178-192.

GORDON, Edwin. Manual musical aptitude profile. Boston, Houghton Mifflin, 1965. 113p.

GREER, R. Douglas, DOROW, Laura G. and RANDALL, Andrew. "Music listening preferences of elementary school children". Journal of Research in Music Education, vol.22, no.4, 1974. p.284-291.

GREER, R. Douglas, DOROW, Laura G., WACHHAUS, Gustav and WHITE, Elmer R. "Adult approval and students' music selection behaviour." Journal of Research in Music Education, vol.21, no.4, 1973. p.345-354.

GROUP PLANNERS LTD. Hornby - people and their problems: a town planning study prepared for the Paparua County Council, 1974.

HAACK, Paul A. "A study in the development on music listening skills of secondary school students." Journal of Research in Music Education, vol.17, no.2, 1969. p.193-201.

HAGAN, Mary Tobias. The structural method of teaching music listening, grades kindergarten through to nine. Unpublished Ph.D. thesis. Washington, 1971.

HAIR, H. I. "The effect of training on the harmonic discrimination of first grade children." Journal of Research in Music Education, vol.21, no. 1, 1973. p.85-90.

HAMM, Charles E., NETTL, Bruno and BYRNSIDE, Ronald. Contemporary music and music cultures. Englewood Cliffs, New Jersey, Prentice-Hall, 1975. 270p.

HELM, Everett B. Composer, performer, public: a study in communication. Florence, Leo S. Olschki, 1970. 212p.

HINDEMITH, Paul. A composer's world. New York, Doubleday and Co., 1961.

HOFFER, Charles R. The understanding of music. Belmont, California, Wadsworth, 1967. 483p.

IDSON, W. L. and MASSARO, W. "A bidimensional model of pitch in the recognition of melodies". Perception and Psychophysics, vol.24, no.6, 1978. p.551-565.

INHELDER, Barbel. "Memory and intelligence in the child." Studies in cognitive development: Essays in honour of Jean Piaget, Ed. Elkind and Flavell, New York, Oxford University Press, 1969. p.337-364.

JONES, M. MASER, D. J. and KIDD, G. R. "Rate and structure in memory for auditory patterns." Memory and Cognition, vol.6, no.3, 1978. p.246-258.

KROGER, Jane E. "Socioeconomic status as related to children's use of leisure." New Zealand Journal of Educational Studies, vol.10, no.2, 1975. p.128-134.

LEHMAN, Paul Robert. Tests and measurements in music. Englewood Cliffs, New Jersey, Prentice-Hall, 1968. 99p.

LESSER, Geoffrey T. "Learning, teaching and television production for children: the experience of Sesame Street." Harvard Review, vol.42, no.2, 1972. p.232-272.

LESSER, Geoffrey T. Children and television: lessons from Sesame Street. New York, Vintage Books, 1974.

LESSER, H. Television and the pre-school child: a psychological theory of instruction and curriculum development. London, Academic Press, 1977. 261p.

LOFTUS, Geoffrey R. and LOFTUS, Elizabeth F. Human memory: the processing of information. Hillsdale, New Jersey, John Wiley and Sons, 1976. 179p.

LUNDIN, Robert William. An objective psychology of music, 2nd ed. New York, Ronald Press, 1967. 345p.

MACKWORTH, Jane F. Vigilance and attention: a signal detection approach. Penguin Science of Behaviour, 1970. 189p.

McDONALD, D. "Environment: a factor in conceptual listening skills of elementary school children." Journal of Research in Music Education, vol.22, no.3, 1974. p.205-214.

McLEISH, John. "Musical cognition." Music education research papers no.2, London, Novello, 1968.

MEYER, Leonard B. Emotion and meaning in music. Chicago, University of Chicago Press, 1956. 307p.

MICHEL, Paul. "Optimum development of musical abilities in the first years of life." Psychology of Music, vol.1, no.2, 1973. p.14-20.

MICHEL, Paul. Psychologic and aesthetic aspects of the personality building function of music and music education. Paper presented at International Society for Music Education Conference, London, Canada, 1978.

MILLER, G. A. "The magical number of seven plus or minus two." Psychological Review, vol.63, no.2, 1956. p.81-97.

MOOG, Helmut. "The development of musical experience in children of pre-school age." Psychology of Music, vol.4, no.2, 1976. p.38-45.

MORAY, Neville. Listening and attention. Penguin Science of Behaviour, 1969. 107p.

MORGENSTERN, Sam. Ed. Composers on music: an anthology of composers' writings. London, Faber, 1954. 584p.

MUELLER, Kate Hevner. "Studies in music appreciation". Journal of Research in Music Education, vol.4, 1956, p.3-25.

MURSELL, James. The psychology of music. New York, Norton, 1937.

NORMAN, Donald A. "Cognitive organization and learning". Attention and Performance V. Ed. Rabbit and Dornic, London, Academic Press, 1975. p.530-546.

NORMAN, Donald A. Memory and attention: an introduction to human information processing. 2nd ed. New York, John Wiley and Sons, 1976. 262p.

NORMAN, Philip. Compiled bibliography of New Zealand compositions. Vol.1, (1940-1980). Composers' Association of New Zealand, Christchurch, Nota Bene Music, 1980. 146p.

PAYNTER, J. and ASTON, P. Sound and silence. Cambridge, Cambridge University Press, 1970. 365p.

PEACOCK, Alan and WEIR, Ronald. The composer in the market place. London, Faber Music, 1975. 172p.

PETZGOLD, Robert G. "Auditory perception by children." Journal of Research in Music Education, 1969, vol.17, no.1, p.82-87.

PETZGOLD, Robert G. Auditory perception of musical sounds by children in the first six grades. Co-operative Research Project No.1051, University of Wisconsin, 1966. Quoted by Thackray, 1972.

PFLEDERER, Marilyn. "The responses of children to musical tasks embodying Piaget's principle of conservation." Journal of Research in Music Education, 1964, vol.12, no.4. p.251-268.

PIAGET, Jan and INHELDER, Barbel. Memory and intelligence. London, Routledge and Kegan Paul, 1973. 414p.

POPHAM, W. James. Educational statistics, use and interpretation. New York, Harper and Row, 1967. 429p.

POSNER, Michael I. Cognition: an introduction. Basic Psychological Concepts Series. Glenview, Illinois, Scott and Foresman, 1973. 208p.

PRINCE, Warren F. "A paradigm for research on music listening". Journal of Research in Music Education, 1972, vol.20, no.4. p.445-455.

PRINCE, Warren F. "Effects of guided listening on musical enjoyment of junior high school students". Journal of Research in Music Education, 1974, vol.22, no.1. p.45-51.

RASMUSSEN, Warren I. Listening skills through programmed instruction. Unpublished thesis. University of Southern California. 1966.

RATNER, Leonard Gilbert. Music: the listener's art, New York, McGraw-Hill, 3rd ed. 1977. 106p.

REIMER, Bennett. A philosophy of music education, Englewood Cliffs, New Jersey, Prentice-Hall, 1970. 173p.

RIVER, J. A. "A comparative study of traditional and programmed methods for developing music listening skills in the fifth grade." Journal of Research in Music Education, 1970, vol.18, no.2. p.126-133.

ROEDERER, Juan G. Introduction to the physics and psychophysics of music. 2nd ed. New York, Springer-Verlag, 1975. 200p.

ROWNTREE, John P. "A longitudinal study of musical development". Psychology of Music. 1973, vol.1, p.29-32.

SCHAFER, Raymond Murray. Ear cleaning: notes for an experimental music course. Ontario, Don Mills B.M.I., 1967. 46p.

SCHAFER, Raymond Murray. The composer in the classroom. Ontario, Don Mills, B.M.I., 1965. 37p.

SCHAFER, Raymond Murray. The new soundscape: a handbook for the modern music teacher. Universal ed. 26905, Ontario, Don Mills, B.M.I., 1969. 65p.

SCHAFER, Raymond Murray. British composers in interview. London, Faber and Faber, 1963. 186p.

SCHEID, Peter and ECCLES, John C. "Music and speech: artistic functions of the human brain". Psychology of Music, 1975, vol.3, no.1. p.21-35.

SCHRAMM, Carol Schwartz. An analysis of listening experiences. Unpublished Ph.D. Thesis, University of Illinois, 1971.

SCHWARTZ, E. Ed. Contemporary composers on contemporary music. New York, Holt, Rinehart and Winston, 1967. 375p.

SERGEANT, Desmond and ROCHE, Sheila. "Perceptual shifts in the auditory information processing of young children." Psychology of Music. 1973, vol.1, no.2. p.39-48.

SERGEANT, Desmond. "Measurement of pitch discrimination." Journal of Research in Music Education. 1973, vol.21, no.1. p.3-19.

SESSIONS, Roger Huntington. Questions about music. Harvard University Press, 1970. 166p.

SESSIONS, Roger Huntington. The musical experience of composer, performer, listener. Princeton, New Jersey, Princeton University Press, 1950. 127p.

SHUTER, Rosamund. The psychology of musical ability. London, Methuen, 1968. 347p.

SIEGEL, S. Nonparametric statistics for the behavioural sciences. New York, McGraw-Hill, 1956. 312p.

SIMONS, Gene M. Early childhood musical development: a synthesis of research findings, 1960-1975. Paper presented at International Society for Music Education Conference, London, Canada, 1978.

SIMONS, Gene M. "The preschool disadvantaged: a study in music teaching and learning". Abstracts of Research Reports presented at Music Education National Conference Biennial Convention. Atlanta, Georgia, 1972.

SPEARRITT, Donald. Listening comprehension: a factorial analysis. Australian Council for Educational Research, 1962. 149p.

TAYLOR, Sam. "Music development of children aged seven to eleven". Psychology of Music. 1973, vol.1, no.1. p.44-49.

THACKRAY, Rupert M. "An investigation into rhythmic abilities". Music Education Research Papers No.4, London, Novello and Co. 1969. 48p.

THACKRAY, Rupert M. "Rhythmic abilities in children". Music Education Research Papers No.5, London, Novello, 1972. 116p.

THACKRAY, Rupert M. Some research projects in music education unpublished interim report. Schools Council Publications, Reading University, 1974. 130p.

THOMSON, William. Music for listeners. Englewood Cliffs, New Jersey, Prentice-Hall, 1978. 490p.

TRIANDIS, Harry C. Attitude and attitude change. New York, J. Wiley and Sons, 1971. 232p.

WALLACE, Margaret Joan. Listening to form in music: an investigation of the ability of Form One children to distinguish form in music. Unpublished M.A. thesis, Otago University, 1970. 114p.

WHITE, B. W. "Recognition of distorted melodies". American Journal of Psychology. 1960, vol.73. p.100-107.

WICKER, A. W. "Attitude versus actions: the relationship of verbal and overt behavioural responses to attitude objects." Readings: Attitudes and Behaviour. Ed. Kerry Thomas, Penguin, 1971.

WILSON, W. C. Some inter-relationships of verbal and musical abilities in elementary school children. Unpublished thesis. University of California, Berkley, 1960.

WING, Herbert D. 1960 manual for standardised tests of musical intelligence. City of Sheffield Training College, Ref.600.

WINTER, Wayne. Music and taste: an investigation into the processes of musical communication. Unpublished M.A. thesis, Canterbury, 1978. 163p.

YENDOVITSKAYA, T. V. "Development of attention." The psychology of pre-school children. Ed. A. V. Zaporazhetz and D. B. Elkonin. Cambridge, Massachusetts, MIT Press, 1971.

YINGLING, Robert W. "Classification of reaction patterns in listening to music." Journal of Research in Music Education. 1962, vol.10, no.2. p.102-120.